Telephony.

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YOU CAN BE WHAT YOU WILL.

Let your aim ever be to better the work you are doing. Better remember always that you cannot better the work you are doing without bettering yourself. The thoughts that you think, the words that you speak, and the deeds you perform are making you either better or worse. Realize with Henley that you are the master of your fate and the captain of your soul. You can be what you will be. Forget yourself in rendering service to others. If an employe, strive to make yourself of greater value to your employer. Look upon yourself as a manufacturer. Think of yourself as being in business for yourself. Regard yourself as a maker and seller of service, and ever bend your thought and your energies toward the improvement of your product.—Thomas Drier.

In the Interest of Competition.

The Interstate Commerce Commission has decreed that railroads cannot own steamboats that touch ports reached by their railway lines, and has notified the Pennsylvania, New York Central, Lehigh Valley and other railroad corporations that they must give up their marine transportation business by December 1, 1915. This decision is based on the contention that the lake-line boat service is not maintained in the interest of the public, and that its operation will "prevent, exclude and reduce competition on the Great Lakes." The commission does not think it beneficial to the public for the companies to own both the water and land transportation facilities represented by their boats and railways. It is the wrong kind of competition.

What will the Interstate Commerce Commission do when it takes up the case of the American Telephone & Telegraph Co., the Bell operating concern and the Western Electric Co., the Bell manufacturing branch? The administration at Washington seems to be very solicitous about preserving competition. Its various departments and commissions have gone on record as favoring real competition, a square deal for everybody, little and big. The Bell-Western Electric alliance, as now existing, is grossly unfair to the Independent telephone manufacturer. He sees the Bell operating companies donating their buying orders to the Western Electric and refusing to purchase from the Independent, while the Western Electric is left free to range the Independent operating field, leaving no stone unturned to wrest Independent business from the manufacturers to whom it rightly belongs.

This is a one-sided condition that should be abolished. Either the Bell should buy in the open market, or else the Western Electric should keep out of the Independent field. The Interstate Commerce Commission should take cognizance of this situation and apply a remedy to end this unfair competition.

Independent Securities.

One of the most hopeful signs of the times is the widespread interest taken in the recent plans to create a wider market for Independent telephone securities. Investors are more interested than ever in this most staple investment, and the campaign being made to induce telephone managers and employes to strengthen the industry and increase their income by selling Independent securities to the local investors is meeting with marked success in all sections of the country.

There is no business less affected by wars or panics than the telephone business. Its permanency and stability is unquestioned. When telephone properties are well built and properly managed, there is no better or safer investment and this fact is becoming better known every day. With the advent of better times and the renewed activity in the field, there should be no trouble in placing all the desirable bonds offered by telephone companies.

Take Care of Body or You'll Lose

By HERBERT KAUFMAN

Science is nowadays occupying a desk in the office of trade. One by one, the competent plants of America are being reconstructed by the efficiency expert. Guesswork, a great "wasting disease of business," is gradually disappearing from industrial systems. Marvelous devices, with minds of steel, not only stop leakage, prevent mistakes and obviate accident, but even insure the choice of sound and uniform raw materials.

These cog-brained geniuses are "from Missouri." They are confirmed skeptics. They take nothing for granted. They prod and bend and twist and hammer until they establish to infinitesimal fractions the durability, tensility and breaking point of every sample.

My! How we are loping along. It's hard to estimate how many millions of dollars we are saving annually, in time and merchandise. But the very men who have found it so expedient to constantly overhaul boiler and engine and pulley and wheel and belt—to give a timely twist of the screwdriver and a needed turn of the wrench—have not sense enough to apply the same methods to perfect their physical condition and thereby indefinitely postpone deterioration of their faculties.

Employers who never purchase equipment unless they have made comparisons of all the different models on the market, continue to engage men in the same haphazard way that prevailed in the medieval ages. Ability and reliability are regarded as the very important essentials in measuring fitness. The only references demanded are those which attest to knowledge and honesty—stability is seldom thought of—mental and moral flaws are guarded against, but no search is made for organic warps and fissures and cracks and rot-spots.

One hundred years ago the merchants did not even bother with the private habits of their help. Then slowly trade awoke to the truth that loose living definitely and directly affects energy and capacity. Drunkenness and viciousness became handicaps. But the twentieth century calls for still higher ideals in the measurement of men—ideals more sympathetic with the pace of progress. The same logic that argues the shortsightedness of second rate machinery, advises that sturdiness as well as character and deftness be constructed a cardinal requirement in the applicant for work. No man should be given a post of responsibility unless he is endowed by health as well as reason to fulfill the obligation.

The star salesman with bad teeth is likely to pass an agonizing night and meet an important customer the following morning distracted, enervated and unable to concentrate his attention to his duties. The gluttonous factory foreman, addicted to indigestion, frequently thinks with his spoilt stomach and involves his firm in unnecessary labor disputes. The dyspeptic attorney, however well grounded in the law, may be so irritable and nervous that a better poised but inferior counsel can salivate him from the jury.

Without ready command of faculties and control of vital forces, success is improbable. We prophesy a near future in which a mere record of past performances will not be sufficient qualification for promotion.

Before intrusting men with heavier loads, we will subject them to a series of scientific tests. We will "prod and plug and bend and twist and hammer" until we establish the "durability, tensility and breaking point of the candidate." We will look at his teeth, his lungs and investigate his blood, his stomach, his liver, his kidneys and his heart. Men who won't keep their bodies in first class shape will go to the junk heap.

Broadly translating an ancient postulate—"mens sana in corpore sano"—efficiency is controlled by health.

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"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

The answer to these questions will be found in the reading section bearing the same number. Answers are not to be sent to TELEPHONY for criticism. For the benefit of those desiring the advantages of a correspondence course, the Engineering Extension Department of the Iowa State College has volunteered to answer questions and criticize replies to questions and solutions of the problems which will be presented from time to time in connection with the course. No charge will be made for this service and the offer applies to all subscribers of TELEPHONY regardless of whether they live in Iowa or elsewhere. Correspondence should be addressed to the Engineering Extension Department, Iowa State College, Ames, Iowa.

117. Give a definition of effective voltage.

118. What are the three ways by which the voltage of a generator may be varied?

119. Why is the core of the induction coil made of a number of fine iron wires instead of one solid rod?

CHAPTER VI.—The Magneto Set (Continued).

120. *The direct current generator.* It is considered advisable at times to equip party line telephones with a form of generator which may be used to deliver either alternating or pulsating current. In such cases a push button is mounted on the telephone set. The subscriber operates the push button when pulsating current is to be sent out on the line. The reason that this arrangement is used is to prevent the ringing of the alternating current bells of other parties when calling the exchange or because of some similar selective requirement. This type of hand generator is also in-

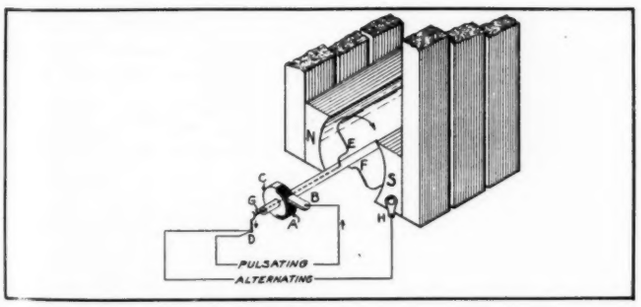


Fig. 47. The Pulsating Current Generator.

stalled in magneto switchboards serving party line systems equipped with biased ringers. The principle used in obtaining this effect in the operation of the generator is shown in Fig. 47. All parts of the generator, as already described, are retained, and in addition a brush *B* is added with a commutator having an insulating segment *A* and a metal segment *C*. This commutator is placed on the shaft, as shown so that the brush *B* reaches the metal segment *C* when the coil of the armature occupies a vertical position. At this time the wire of the coil is *not* cutting any lines of force, but is traveling along them. It immediately begins to cut lines of force, however, as the rotation proceeds.

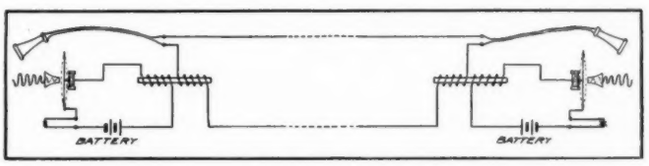


Fig. 42. Circuit Showing Induction Coil Relation.

Since one terminal of the armature winding is connected to the frame of the generator and the segment *C* is a part of this frame, it is clear, from an application of Fleming's rule, that whenever the brush *B* is in contact with segment *C* a current will flow, as indicated in the illustration by the arrows. But just at the instant that this current would ordinarily be reversed, the brush *B* leaves the metal segment *C* and the circuit is broken. Therefore a pulsating current, flowing toward the brush *B* and leaving the generator at the terminal *D*, will be generated whenever the armature is rotated. Alternating current will, of course, be obtained between the terminals *D* and *H* as usual. If pulsating current in the other direction is desired, it may be obtained between the same terminals, *D* and *B*. As a matter of fact, the direction of pulsating current obtained is determined by the use of one or the other of these terminals as the originating terminal.

121. *Generator connections.* Let us consider for a moment the telephone transmission circuit shown in Fig. 42. The elements essential to telephonic conversation are shown, but no means have been included to enable one station to call the other when desirable. There are several arrangements for this purpose, such as vibrator bells and buzzers, but calling devices of this character are only suitable for lines of short length and low resistance. In standard telephone practice the polarized ringers and magneto generator are universally used.

There are many arrangements differing in details for adapting these two items of equipment to this purpose. In order to simplify the consideration of the underlying principles it will be sufficient to discuss only one of the standard arrangements. It is clear that the simplest arrangement would be to connect the generator in series with the

ringer. When a call is received the incoming ringing current would then be compelled to overcome the resistance of the armature winding, as well as that of the ringer coils.

It was very early recognized that the armature resistance should be eliminated from the circuit followed by the incoming calling current. Accordingly springs, which normally short circuited the armature winding, were added, as shown in Fig. 48. When the crank of the generator is turned the insulated stud *A* is forced to the left, and the spring *B* is pushed away from the other spring 3, which is attached to the frame of the generator. Since one terminal of the armature winding is attached to the frame of the generator and the other end appears at the insulated pin 4, it is evident that when springs 3 and *B* are in contact the armature winding is practically short circuited. Whenever the generator is in use, this short circuit is removed and its armature winding is placed in series with the ringer and the line.

The details of the mechanism are shown in theory in Fig. 48-*B*. Some effort is required to turn the armature pinion 7, because of the magnetic field of the generator, therefore, the large gear 6 is subject to a brake action. The crank is attached rigidly to the shaft 4, while the wedge-pointed block 2 is attached rigidly to the large gear 6. As a result any muscular effort applied to the crank will have the effect of forcing the shaft *A* to the left before the large gear will be turned. The shoulder 8 will prevent the shaft 4 traveling too far to the left, and in its limited travel it will operate the springs pressing against the insulated stud 5. This same mechanical arrangement may obviously be used to operate any desired spring arrangement desired.

The use of telephones on bridging lines called for ringers of a higher number of turns in the coils and a resistance in order to prevent leakage of the voice currents. It was necessary, therefore, to arrange so that each generator should short circuit its own ringer when calling out on a party line. The reason for this was that the resistance of the party line ringer was so high as to seriously reduce the outgoing ringing current. Accordingly the arrangement shown in Fig. 49-*A* was employed It is clear that with such an arrangement the ringer will be short circuited and its resistance eliminated from the cir-

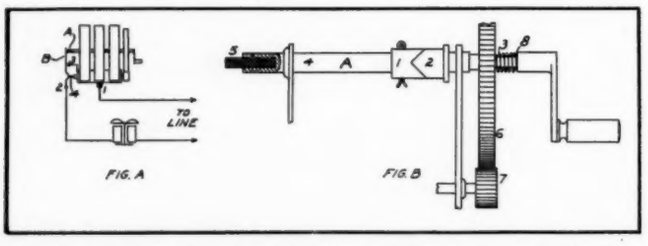


Fig. 48. Series Generator Circuit—Details of Shunt Mechanism.

cuit when the crank is turned. At the same time the armature winding is short circuited through springs 3 and 4 when idle.

There is still another arrangement used in which the generator circuit is normally open, and is closed when the crank is turned. This is shown in Fig. 49-*B*. It is obvious that the ringer in such an arrangement must remain bridged on the line at all times. In this arrangement each generator will ring its own bell, while in the arrangement shown in Fig. 49-*A* the home ringer is silent during ringing.

Numberless variations of these arrangements are used to

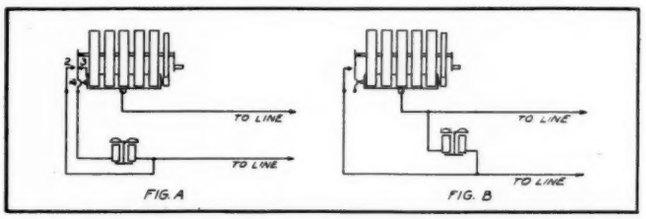


Fig. 49. Two Types of Bridging Generators.

secure special objects, but the principle of controlling the switching function by the operation of the generator crank is very similar in all cases.

(To be Continued)

Convention of Telephone Pioneers in San Francisco.

The fifth annual meeting of the Telephone Pioneers of America will be held in San Francisco, on September 21, 22 and 23, with headquarters at the St. Francis Hotel. The morning of the first day will be devoted to a business meeting, while in the afternoon a number of papers will be presented. In the evening the American Telephone & Telegraph Co. will give its annual banquet, to which the Pioneers and members of their families are invited.

On the second day of the convention the Pacific Telephone & Telegraph Co. has invited the members and their friends to participate in a trip to Sausalito and Mt. Tamalpais, boasting the crookedest railway in the world, said to be one of the most interesting trips in the country.

On September 23 it is proposed to hold a telephone reunion at the exhibit of the American Telephone & Telegraph Co. in the Panama-Pacific International Exposition.

The Special Telephone Pioneers Limited will leave New York, Boston and Philadelphia, Tuesday, September 14; Chicago, September 15; Omaha, September 16, stopping for a short period; Denver, September 17, stopping four hours. There will also be short stops at Colorado Springs and Salt Lake City, arriving at San Francisco September 20. A number of interesting trips have been arranged during the sojourn of the Pioneers in California. On October 1 a trip to Los Angeles by train has been planned, from which point it will be optional with the members of the party to return by direct route to Salt Lake and Chicago, or on the Pioneers' Special via the Grand Canyon.

The estimated fares from the various points to San Francisco and return are as follows: New York, $227.38; Philadelphia, $227.38; Boston, $224.25; Albany, $213.75; Buffalo, $201.05; Chicago, $166.05. These rates include round trip railroad and Pullman transportation; all meals en route in dining cars (no meals at Chicago, Kansas City, Colorado Springs and Salt Lake); side trip to Grand Canyon of Arizona; hotel accommodations (lodging only) and transfer to or from station at stop-over points. The minimum number required to charter a special train is 125. The minimum number for a special car is 20. Members of the party who gather at specific points to take part in the trip will be accommodated on special cars.

Damages Awarded on Account of Tree Trimming.

Damages of $300 have been awarded Mrs. Mary A. Sommers against the Henderson Home Telephone Co., of Henderson, Ky., because employes of the company, in stretching wires, cut and trimmed trees in plaintiff's yard. The damages asked for were $600.

Financial Matters

The Natural Salesmen of Securities—B. G. Hubbell's Plan

By J. C. Kelsey

I have attended many conventions but never have I attended one which did not have one speech or paper on the question of financing. Many of us have heard it so often that we have grown to believe the world is against us. We feel, possibly, that we may be financial pariahs, forbidden to wander in the Elysian fields of golden Wall Street, and that financial Pharisees cross the street to avoid us.

Poor, misunderstood, Wall Street stands accused of many and unforgivable crimes. Our specific charge is willful and premeditated neglect. Are we quite right in our assumptions?

I find that a strong financial house in Grand Rapids has undertaken to handle the new securities of the Home Telephone Co., with headquarters at Muskegon, Mich. A better security could not be bought.

A Chicago house of national reputation has undertaken to sell the lately issued securities of the Home Telephone Co., at South Bend, Ind. Get the name! Home Telephone Co.

A Louisville financial house has purchased the securities of the Jacksonville Home Telephone Co. in spite of the so-called theory that finance dreads competition.

A St. Louis house has agreed to handle a $100,000 bond issue for a Kansas company which earns five times the interest. And before I leave the subject, I want to remind you that a New York firm took the bond issue of the Citizens Telephone Co., of Grand Rapids, and has never regretted the step.

There are more of them and I could go on to show you dozens of cases to prove to anyone that we are not at all victims of conspiracy or neglect.

Last week one of the attending manufacturers at the Memphis convention related an incident regarding one of his customers who owed him $5,000. He came to Chicago with $15,000 worth of bonds, and asked the factory people to find him a lawyer.

You know the rest. He heard excuses, received offers of fifty cents on the dollar, and wore out his shoes on the cold, hard financial street of Chicago, and his temper as well.

Finally, the factory people in desperation, told him to go home and try to sell the bonds in small lots and to his own people. Inside of a month, the factory received a joyful letter, in which was enclosed $5,000 (which was joy in itself), ardently thanking the manufacturer who so wisely directed him to the goal of financial ease.

Did you get the thought in the first sentence of the last paragraph? The factory people advised him to go home and try to sell. They asked him to try—to try.

In one paragraph of Mr. Hubbell's letter, published in TELEPHONY, of May 8, this point is brought out: "I have found the difficulties to overcome in selling telephone securities are more particularly in convincing telephone managers that they can become good security salesmen than in convincing the public that telephone securities are good."

What a world of human nature there is in that paragraph! Mr. Hubbell's difficulty consists in trying to make telephone men try to do something.

How many complaints we make against the world, accusing it of defrauding us, or being against us, when we have never tried to have it with us. Whatever failures we may have, are actions of self default, because we have never done our part. We may never have financed properly because we have failed to try to get the proper parties—we have wanted them to come to us.

No one is better able to talk the telphone business than you are. Why should you leave your town and go to a city to ask financial aid and try to convince people there that they can sell telephone securities when you can do it better yourself? That is Mr. Hubbell's point.

We have the best qualified salesmen, already trained and on hand, if we but only would try to use them. A telephone man sells service every hour. He is an experienced salesman. He is the logical man to sell securities at home. No one can compete with him.

Seeing telephone men come to Chicago or New York to sell securities reminds me: Back in 1895, I hunted a job in Chicago—just why I can't say. In the midst of my efforts and while waiting for a man to appear so I could ask him for work, I had a talk with a policeman.

We had no violent or one sided conversation, nor was I under arrest. I found myself telling the kindly copper my troubles and he gave me some advice which I have never forgotten.

"If you can't find a job in your home town where they know you, how can you expect to find anything here?" "Now honest, did you try to find a job at home?"

I had to confess that I had not. Like others, I had flocked to a big city. There were more men than jobs—just as there are more financial needs than financial houses can meet—so I went home, and found a job running the waterworks and electric light plant.

I had never tried to find a job at home. All I had for my spent railroad fare, was bitter experience.

Does it not fit you? Many times have I met telephone men in Chicago, with a bundle of securities under their arms, tramping the streets of Chicago, waiting patiently in anterooms of financial houses, and slowly losing their tempers. Then they shook themselves and went home. To their surprise the home folk had a way out for them. So I am going to paraphrase what the kindly old policeman said to me:

"Mr. Telephone Man, if you can't sell your securities at home, you can't sell them in Chicago."

Have you tried to do so? Have you earnestly approached every possible aid, and have you properly shown your case? Do you really believe in yourself? Do you believe in your business? Do you realize that the very best opportunities in life lie under your feet at home?

Somehow, the stranger always knows our home virtues better than we do ourselves.

Your business is a local issue—so is your bank, your grocery store, and even your life. You can't get away from it. You read Chicago news in your local paper, but 97 per cent. of its space is devoted to its home affairs.

You are where the money is too. Don't think the money is in Chicago or New York. A city bank with $100,000,000 does not mean that city people have deposited that much.

It means that you local bankers have placed their funds there. It means that there are depositors in your town who have placed money in the banks at 3 per cent. because there is no safe place for a higher rate.

That is up to you. Banks hold money for people who are laying up for the rainy day. The banker must always be ready to meet the demands of his depositor or he may be sent to prison.

The rainy day depositor is the one who will or who can buy your securities. The bank is only your competitor, and as a rule, we do not give loving aid to competitors.

The banker naturally urges you to go to the larger city. He rejoices when you leave because if you stayed and hustled, you would cheat him of depositors. You have a better argument than he. He is naturally not commercially friendly to any concern that tends to deprive him of deposits.

You came to the city to finance because appearances were more favorable. The longer I live, and the more I see of people, the more I realize that a glossy appearance does not indicate a bank roll. The people who have real money are plain, when compared to those who have not.

In my small banking experience in Chicago, I have been amazed to find where the real money is. One woman has $6,000, another $5,000, and still another $16,000—all three holding that money ready to educate children. But the people one naturally approaches for deposits usually apply for a loan before you leave.

The real financiers are the depositors of real money. Who has a better chance to know his people than the telephone manager? That is what Mr. Hubbell is driving at. No wonder he succeeded in selling the $700,000 issue of 7 per cent. preferred stock.

His managers went direct to the people who, by spending less than they make, buy all the securities the world offers. The telephone manager can find these people if he but tries. Have you honestly tried to get this real investor of America?

We have been deceived by appearances. We are struck with reverence for extravagant city ways. Because we see signs of extravagance, we have to reason that there is money there. We are prone to ridicule the driver of the Buick and admire the man who gets a new Packard every year.

If you coax this apparently rich city man into your enterprise, not only will you give him a ruinous bargain but you will have to advance him securities so he can borrow for you. The other fellow would go down in his sock and pay for your bond, and not hawk it around as collateral until it is discredited.

Let us make up our minds that in the past we have been partially at fault. We did not think much of the home town. We under-rated it, and left hurriedly for the money centers of the cities to seek our fortune there.

We were surprised to learn that our real opportunities were at home and among our friends. Listen to the policeman. He will tell you that if you cannot do it at home, you can't do it elsewhere.

For years we have been sitting right above a gold mine. That little mine is the Home Telephone Co. We have watched it grow. We gave it little heed and made little study of its character. We rather left all of our psychological analyses with the wire chief or the chief operator.

We expected 50 telephones and we got 500. We hoped to get 1,000, and got 10,000. We have gone along, somewhat as mother, never believing that daughter has grown up and is able to take care of the children. But in spite of our laziness and our lack of analysis, this home-owned and controlled giant has grown up and is talking as a man should.

Mr. Hubbell is not alone in his assertion that a New York banker told him that locally-owned and controlled plants are best for public benefit. I have heard it said more than once.

I have heard thinking men say that the telephone business is one above all which will not stand for economical combination. You, yourself, know that it is one of the penalties of the telephone business that the larger your territory grows, the less will be your profit. And you know above all things, that not 3 per cent. of your business ever gets beyond your local gate.

Why tempt fate for a paltry 3 per cent.? Why stick to a doctrine which means eventual bankruptcy? Why defy the experience of ages by trying to build a telephone Tower of Babel?

No one can see in the present cry for universal service, anything but personal ambition, glory and enrichment, with the everlasting idea, "after me, the Deluge."

The greatest weakness of universal ambition is that it gets too far away from the real money saver who buys. It gets nearer and nearer to some Shylock who will make the pound of flesh seem as a single drop of blood.

The locally-owned company is close to the soil. It can deal direct. It can get dollar for dollar and no Shylock will have a chance.

If you have securities to sell, put the telephone man to work. Put a value on the words Home, Local and other indications of home. There is no place like home.

Mr. Hubbell has shown you a way. Will you try it? His greatest difficulty with his own men was to convince them to try to sell. Everyone can at least do that much. The telephone manager has a gold mine under his feet. Will he try?

We have no enemies beyond mere normal ones. We are not abused, reviled, or neglected. If we have any reason at all for complaint, we can blame ourselves. Do not blame Wall Street, La Salle Street or even the Bell interests. If you are suffering at all, be sure that you are not caught with the goods of negligence.

No company is too small to give heed. I liked President McVey's little lecture at Memphis. He said he never wanted to hear the word "little fellow" again.

We may be little as compared to a system as a whole, but not as against our neighbor. You are not too small to give ear to Mr. Hubbell's plan.

Out of all these financial plans be sure that success will come merely because some men are willing to try. Have you tried every path?

It was Mohammed who, when he found that the mountain would not come to him, calmly went to the mountain himself.

MORAL: We have not half tried.

Using the Telephone Directory to Ward Off Fake Agents.

A member of the plant department, according to the Telephone Review, tells of another addition to the ever-increasing sphere of usefulness of the telephone directory. He says that several days ago an agent called at his home soliciting orders for a "large house which was going to open a local branch."

"My wife having heard that story before," says the plant man, "decided to try a new way to hasten Mr. Agent along, so she told him that if his company was as large as he represented it, it would be listed in the telephone directory and she would look it up."

Needless to say no such company was listed, nor did Mr. Agent wait to hear the result of the investigation.

Fundamental Principles of the Telephone Business

A Reading Course Designed to Present Logically the Principles Which Underlie Successful Organization and Operation of Telephone Properties —Prepared Under the General Supervision of Stanley R. Edwards—This Section on Economics of Telephony written by James H. Shoemaker

Quiz Questions on the Preceding Installment.

61. What distinction is pointed out as to the theoretical and practical meaning of the word "regulation"? What general rule is given as to regulation? What is said to be the purpose of regulation?

62. What is given as one great cause for the first regulative legislation?

63. What is the explanation given as to why state supervision of the railroads began about the same time that the Interstate Commerce Commission was created, while state telephone regulation began only about 10 years ago? State another element behind the demand for legislative regulation of utilities which the telephone helped to create.

CHAPTER IV. Regulation and Legislation (Cont'd).

64. *Another Cause of Regulative Legislation.*—Even well meaning managers of telephone companies, themselves, were badly fooled about the profits of the business. A most estimable manager followed the dollar-a-month-county-service plan. His method of bookkeeping caused his business to "show" a profit of 14 per cent. at first. He paid his shareholders 10 per cent. He was sure he was tremendously careful. He was certain he was paying out in dividends less than he was earning. But he was ignoring depreciation. Later, as his renewal and repair costs crept higher, he cut his dividends to 8 per cent. Finally he cut them to 6 per cent.

He, himself, worked both day and night and through his pleasing personality was able to get almost double the ordinary amount of help out of every dollar he paid out in wages. But he suffered a nervous breakdown and finally died. His death was a sacrifice upon the altar of utility errors. He died trying to make true the error that 6 per cent. or more could be paid on a property used in supplying "dollar-a-month-county-service."

The buyers of the service were pleased to believe as true, this self-same error. They were pleased to believe as true, the promoters' lies and the small companies' self-delusions. Therefore the buyers of telephone service were the first to demand legislative regulation of telephones. They (the buyers) were confident regulation *meant* rate *reductions*. The sellers of telephone service knew little about depreciation in those days. Therefore, they also felt confident that regulation would mean reduction of rates—and the sellers of telephone service opposed regulation, at first.

But this opposition on the part of the sellers only served to strengthen the demands of the buyers for regulation—and among the voters more are buyers than sellers. Therefore, the opposition of misinformed sellers, as well as the demands of equally misinformed buyers, was a part of this element which we call *the second cause of legislative regulation.*

65. *A Third Feature of Regulative Legislation.*—The first cause of regulation was the short-sightedness of railroad managers, coupled with the consequent ill-will and opposition of railroad patrons. In it there was little, if any, of the desire for mutual helpfulness.

The second element, or cause, was an erroneous and exaggerated idea as to the profits of the telephone business. There was an exaggeration of profits which existed in the minds of many telephone managers, themselves, as well as an exaggerated idea of profits which existed among the buyers of service. The reader is urged, therefore, to dwell upon these points:

In the beginning, legislative regulation was caused, first by a reasonable remand on the part of patrons for the removal of favoritism or discrimination. In the second place legislative regulation was carried forward by the unreasonable demands in certain instances, at least, of patrons for a reduction of rates. The fact should be kept clearly in mind that the demand for the removal of favoritism or unjust discrimination is a demand which must be made by every well meaning citizen. The other demand is one which must be opposed. It can be opposed effectually by no other means than the presentation of the facts in such manner as to persuade the people to believe, accept and act upon them.

This brings up the third feature, element, or factor, in rate regulation. As we study legislative regulation today, we find an almost complete reversal of affairs, at least so far as the previously mentioned second cause is concerned. Everybody is so completely educated concerning the evils of favoritism in utility rates that the violations of the proprieties in that line are on the decline by common consent. But as to the legislative regulation of other utility affairs, many patrons are now opposing it while most wide awake leaders of utility businesses are now demanding it.

Before going farther it is repeated that it was *ignorance—error*—on both sides which led the buyer to favor and the seller to oppose regulation. The seller wanted regulation, not for the sake of justice, but for his own self-interested profit and advantage. And in certain instances, at least, utility managers opposed regulation at that time not because they wanted justice, but because they wanted to continue what they erroneously believed to be "a big profit." It was selfishness as well as error *on both sides.*

Let it be observed, however, that in our present circumstances, there is a third element. It is the element of fact—the truth in the matter. It was *error* that caused self-interested buyers to demand, and self-interested sellers to oppose, legis-

lative regulation, in the past. But it is *truth* that is causing self-interested sellers to demand, and self-interested buyers to oppose (if in the face of facts they continue to oppose) regulation now—and henceforth.

The third element or cause for legislative regulation is truth—or the facts which are being brought out by the careful analysis of experience in the utility operating field. In other words, for ten or fifteen years we have had the hilarity which accompanied speculative and "exploitive" utility intoxication. The managers of utilities now want to "be good." But there is a tendency on the part of their patrons to say: "Why should we believe you now? Why should we take time to put the acid test upon your alleged proof that you need the money? If you are sober now and if you were intoxicated before, you must not blame us for liking you better drunk than sober. It was more fun for us and less expensive when you were intoxicated by your own erroneous idea of profits."

The actual needs of the business—the enlightened self-interest of utility owners—is this third element, fact, factor or force.

66. *The Real Reason for Regulation.*—Personal liberty does not require, nor does the right to the private ownership of property permit, any individual to act without restraint. This is the thought and almost the exact words, of Mr. Eshleman, former president of the California Railroad Commission. He says, also:

> As soon as we have two, we have relationship; and relationship must be controlled by some convention—by some sort of a deliberative body, by rules of one kind or another. . . . Regulation . . . is as old as civilization itself and its justification (or, the reason why Providence permits it) is found in the maxim which I roughly translate: "So use thine own as not to injure another's."

Here, then, we begin to get a glimpse of the real reason for legislative regulation. If every one were wise enough and well meaning enough to (voluntarily) so use his own (time, talent and treasure) as not to interfere with; nor to injure another in, the use of his time, his talent or his treasure, there would be no need for utility regulation nor for law in any other form. The real reason for regulation, like the real reason for governments and governors, is that it is the only agency which has the needed power do these two things:

1. Praise and encourage those who do well; and
2. Correct or restrain those who do evil.

It was Paul, the Hebrew philosopher, who said: "Governors are sent of God for the punishment of those who do evil and *for the praise of those who do well.*" Telephone managers could well afford to assess themselves one-tenth of a cent per telephone to provide a $10,000 fund with which to operate a phonograph in every room of every state and national regulative commission to grind out, at ten-minute intervals, that last clause: *"And for the Praise of those who do well!"*

Surely there is somewhere, at least, one utility which has done as much good for the human race as has been done by Mr. Chance and his ball team. But who ever saw such praise for any utility as Chicago passed out to baseball on "Chance" day a few years ago? There are other kinds of praise beside raising rates—and besides refusing to reduce rates. Of course, if Chance had been as completely exhausted as are some of the utilities, which have served their patrons most faithfully, he might not have been able to sit up in his own triumphal procession. It would have been rather grewsome if he had been hauled around on that occasion in an ambulance labeled, "He played good ball, but we think he can live on less food. We have reduced his rations. If he lives after the reduction we will know he was getting too much to eat in former days." And yet that is about the idea which prevails, in certain quarters, as to the reason for or object of rate regulation.

67. *The Bad Effect of Rate Quarrels Upon Regulation.*—If a servant were dying because his wages would not keep him from starving, it would be useless to debate the question: "How may he be compelled to render, in the future, more service for less food?" Neither a publicly-owned nor a privately-owned telephone plant can supply more service, better service or cheaper service while antagonists are preventing it from getting the funds upon which it must feed and grow, for, in this age and with our growing population, whenever a utility stops growing, it begins to die. Therefore the most important facts and factors to be dealt with by the practical telephone economist are these:

(1). There has been, and still is, more or less of a spirit of antagonism against utilities. Self-interested buyers of telephone service have always been persistent in their demand for more service at lower rates. They have persisted in this demand with little, if any, regard for the profits or losses of the seller of the service. They have persisted in this demand when buying telephone service, as truly and as vigorously as when buying matches or newspapers.

(2). This demand—of more for less—seems to be just as vigorous and just as persistent in the villages, cities and states, which have "drafted" telephones out of the class of private undertakings, as elsewhere. It seems to be just as vigorous and persistent after the telephone company has been "sworn in" as a public (utility) servant as before. That is why utility commissions are blamed for raising rates.

(3). Many telephone companies have made the fatal mistake of fasting or starving in the hope of thereby satisfying this demand.

(4). Every day that any company succeeds in evading or delaying the time of its final collapse, every day that any company avoids final death while thus fasting or starving, it is piling up false evidence. Every day it avoids death while accepting starvation rates, or rations, it furnishes evidence which self-interested buyers, political demagogues, prompters and others can use. It furnishes evidence which any and all such "self-interests" do use as indisputable proof of their contention that living rates elsewhere should be reduced to the same (starvation) basis.

(5). It is in consequence of this false evidence that the pressure for public ownership and the pressure for lower rates is just about as strong where existing rates are low as where they are high.

Whether publicly-owned or privately-owned, a telephone undertaking is an economic failure the moment it becomes unable to pay the ruling market rate for the labor and other things

required to originate its plant and maintain and extend its business.

42. *Effect of a Failing Plant Upon Rates.*—A municipality, state, or nation, may have power to publicly mortgage every dollar's worth of private property within its borders. It may have power to buy or build, maintain, operate, improve and extend a publicly-owned telephone business from the proceeds of bonds that are thus secured by private property publicly mortgaged. In this manner it might be possible to use privately-owned property as security upon which to borrow money with which to delay the final day of complete starvation of a failing publicly-owned utility. By this unjust means, it might be possible for a failing publicly-owned telephone business to defer its final collapse longer than would be possible if it were privately owned. But even though, by such unjust means, a publicly-owned failing utility might put off the day of its actual death, being publicly owned would not save it from death. Neither would being publicly owned remove or relieve the injustice of making one class of citizens pay for benefits bestowed upon another class.

Just so long as a failing privately-owned utility uses its credit to delay its final deathgasp, it inflicts an injustice upon someone. Right here is one of the most subtle of all the economic forces or commercial practices which menace the faithful operator of a privately-owned utility. Whether it is publicly owned or privately owned, every failing plant furnishes almost indisputable evidence that the nearby faithfully operated, private utility is charging "robber rates."

All privately-owned utility businesses suffer more or less from every effort of a short-sighted utility owner to charge an unreasonably high rate. On the other hand, the buyer of the service may not suffer, personally, from any effort he may put forth to secure an unreasonably low rate. The evil effect of the individual's fight for low rates is distributed to all users of the service. But a rate that is unreasonably low is just as worthy of the epithet, "robber rate," as is the one that is unreasonably high. This is just as true when the seller of the service is the municipality, state or nation as when it is a private corporation.

All utilities have suffered so much from this controversy over rates that the wide-awake utility leader is always on the alert, now, to offer the best possible service for a reasonable rate. But no leader of a utility, either public or private, can give reasonable service at a reasonable rate unless he is allowed to maintain the credit of his undertaking—allowed to secure the cash required for the up-keep, improvement and growth of his business.

(To be Continued)

Telephone Operator—Her Duties in Serving the Public

Aim of Operator is to Give Good Service—Points to be Observed in Local and Long Distance Work—Paper Which Took First Prize in a Competition Conducted by Mt. Vernon (Ohio) Telephone Co.

By Gertrude A Trittipo

Our work as operators is a great deal more than simply putting up and down connections each day. Our first duty, apparently, is to the subscriber who pays for his good service. Our ideal, then, is to give service—service which is pleasing to the subscriber, as he is the one who is paying for it.

The operator, in order to give good accurate service to the subscriber, should have the following qualities: Courtesy, accommodation, co-operation, speed and patience. She should be kind, interested, have a pleasing voice, be accurate, reliable, ambitious, intelligent, have an interest for the company's good, be faithful, punctual in attendance, healthy, truthful, persistent and obedient.

The saleslady, who is successful in her work, is always smiling, accommodating and very courteous. Although the customer may leave the store without buying, she is still courteous and kind, and sweetly asks the customer to come again.

Success of Company Depends Upon the Operators.

We girls are the salesladies of our company. Although we are not seen by our customers, if we answer them in a sweet tone, "Number, please?"—always gentle and kind, showing them we are anxious and glad to serve them—we can so throw our light that they will readily know the disposition of the operator who is giving them good service. Answer the subscribers as though you were smiling at them. If the operators are what they should be, upon them depends the success of the company.

Our ideals should be high. As we are interested in telephone work, our aim should be high. The operator should be drilled each day in voice-training, phrases of long distance operators, signaling, taking tickets, and in being pleasant at all times, as so much depends upon the sweetness of the voice.

Patience is very important. The operator should always be kind and courteous, even though the subscriber should get very angry or unreasonable at times (as possibly he does). Just keep sweet and refer him to the chief operator or the operator in charge. She should be very much interested in his trouble, as of course he may have a reason for his anger, although it may be unreasonable. It is a very good plan, if any trouble has been reported, to call that subscriber in a few days and ask him if his service is better. He will feel that we are interested in him and want him to have the very best of service.

We should invite our subscribers to our office so that they may become fully acquainted with the work. To have a spe-

cial visiting day would be a good plan. Insist upon the subscribers coming. Do not only show them through the office, and tell them, "This is our long distance board," and "This is our farmer board," but fully explain to them the work in every detail.

The health of the operator is indeed very important. Attention should be paid by the operator to her position at the switchboard and deep breathing. The operating room should be cheerful and home-like and pleasing to the operators.

Our personality is another important point. The way we go about our work and what we try to make out of it shows our personality. We should put our ideal high. Look to that ideal and put one's whole self into the work. Our positives should outweigh our negatives in every phase of life. Then if this is true of us in our positions, we should educate our positives to their highest point. Build the positive rather than the negative.

Our transmitter should be so placed that the upper part touches the upper lip. If we talk one inch from the transmitter, one-eighth of the distance is lost.

When "long distance" answers the subscriber, she should say, "This is long distance," or if it were another town, "This is Zanesville." She should get all the information about the call when the subscriber is giving the call and when he has his mind upon his call. She should not have to call him back and get it by pieces. The operator being at her work daily, knows under what possibilities she works. She also knows about what information she will need. We should know and understand all about our call before we tie up one foot of toll line. The recording operator generally takes all calls and as she is really the most important operator, she should be an old and experienced one—one who is familiar with all of the lines and the different circuits. When she has finished getting all the information she thinks required on a pay-station call, she then tells the calling party the cost for three minutes and requests him to please have change ready.

The long distance operator then tests her line—"listens"—and says, "This is Zanesville." "Are you waiting?" "Are you through?" If the line is clear, then ring.

Great care should be taken in testing. Do not grow careless by testing one town and not another. Listening is just as important, if not more so, than talking. We should be reasonable with other operators. They may not work under the same conditions that we do. Every operator will answer as soon as she possibly can. Have patience with other operators, but always looking after our subscribers' interests.

A complete record of all details should be placed upon the back of the ticket. When the terminal operator answers and she receives the call, she should use her own judgment as to whether or not she should repeat the call. But she must be sure she is right. We should use the terms "sent collect," or "received collect," instead of the term, "Reversed," as we have been doing in the past.

When the terminal operator has her subscriber ready to talk, the originating operator should say to her party, "Please deposit ——— cents for three minutes." If there is any overtime, she should say when he is through, "Please deposit ——— cents for five minutes overtime, or whatever the overtime may be.

We should begin to charge overtime when the parties have talked three minutes and 15 seconds, unless the line has been noisy, when allowance should be made. A report of the reason for this allowance should be made in full on the back of the ticket.

Completing a Long Distance Call.

If an operator is calling our own subscriber for long distance, we should always approach him by saying, "Long distance is calling, Mr. ———." Great care should be taken to prevent the tying up of circuits. Use them for conversation only. If we have made an appointment for our subscriber to talk at a certain time, it is a very good plan to call the subscriber with whom we have made the appointment, five minutes or so before the time, to see if he has remembered his appointment, and if he will be ready to talk, before going through and building up your circuit. Probably if you build up your circuit and get the party on the line, ready to talk, our subscriber, if a business man, may have forgotten about his appointment and gone out.

There are 600 exchanges in all, and as each operator thinks her ticket more important than the rest, we should be very careful about tying up lines.

We should save all tickets whenever possible. Keep after the call just as long as there is any chance of saving it—one week if necessary. When a ticket is cancelled by a subscriber, then is the time to try to revive it, if possible. Do not wait until the next morning. Every ticket should be rushed through as quickly as possible.

Our cords should always be handled correctly. They should be properly tested every morning. We should take just as much pride, if not more, in taking care of our equipment in the operating room as we do in our homes.

We should not only handle our cords correctly but we should use a telephone properly, even in our homes. Never say "Hello," although it has been an established custom for people to answer in that way. We should answer "This is 3897," or "This is Mr. ———," the name of the resident or office telephone. We may thus set an example for others.

To promote harmony, the operators must work together. The girls should have faith in one another. Every operator should be interested in her fellow operators. Be true to our promises in the office work, just as readily as we try to be outside the office. The work will be less, and the service far better, if the operators work with a system and have faith in each other.

"Uniform service is our aim."

May each person traveling receive the same, courteous reply, wherever our red, white and blue shield is found, no matter what one of the 600 exchanges he may be using.

We have in our office at Zanesville, a common battery switchboard with 975 subscribers, including 435 farmer lines. Our service has been decreased very much since the flood in 1913, as a great number of our subscribers felt they were not able to keep their telephones. The exchange is now being rebuilt and the company expects to begin to install automatic telephones next week. I think if every operator is as interested as she should be, and her aim is high, there is a great future in store for us—not only for the Ohio State company, but also the companies with whom we come in contact.

W. S. Vivian, in the meeting at Mt. Vernon, so beautifully emphasized our aims and our ideals in this work. If we put them into practice and use them, we will not only be better salesladies for our company, but the operators with whom we come in contact will be bettered. We will be building Christian characters, day by day, which will not only make our office better, because of our presence, but the world around us.

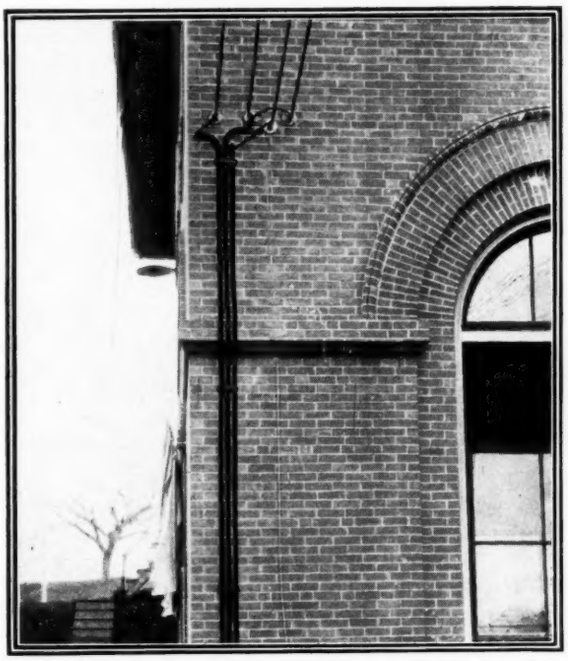
London Daily Papers Solicit Advertising by Telephone.

The Times at Printinghouse Square, and the Daily Mail and the Evening News at Fleet street, London, England, have recently developed a method of utilizing the telephone service which is of considerable interest, says D. H. Kennedy in the Telegraph and Telephone Journal. At Printinghouse Square a number of telephone booths is arranged in a horseshoe form around a room, with the supervisor's desk in the center. A staff of young ladies is employed, whose principal duty is to canvass by telephone for advertising. Rival morning papers are carefully scrutinized, and where addresses are given, the advertisers are called up and the services of The Times' or the Evening News' advertising columns courteously proffered them.

Practical Subjects—Letters and Discussions

Well Built Private Line Entrance to Power Station.

The mechanical construction of many private telephone lines entering electric power stations is a fearful and wonderful example of how not to do it. An exception is shown in the accompanying illustration. The photograph was taken at a Maine hydroelectric plant, in which particular



Carrying Telephone Wires into Power Plant.

attention is paid to securing permanent service in all departments of the station.

All the lines are twisted pairs terminating on strain insulators fastened to the pressed brick wall of the station by circular galvanized iron plates. From the insulators, each pair is carried into a neat conduit run down the side of the building to a service entrance not shown in the view. The installation affords a pleasing contrast to the loose and ragged construction often encountered.

A Cut-Over from Magneto to Common Battery.

When it has been decided up in the front office of the locally-owned and managed telephone company that the exchange apparatus will be changed from magneto to common battery some of the plant employes feel as if a new and more interesting world is being opened up for them. Others begin to wonder if they will be able to hold their jobs under the new order of things. It is often the case that none of the men has had any experience with other than magneto equipment. To those who have not kept abreast with the times by reading and studying literature on the subject, the future exchange is a maze of mystery, while the man who has spent some of his spare hours studying some of the many good telephone books and periodicals will have a good working knowledge of the apparatus to be installed. He will be able to make plans and work out details for the preparation of the plant for the cut-over.

For the benefit of the plant man who finds himself with a job of this kind on his hands I will endeavor to give my experience in preparing an old magneto plant for changing to common battery.

The exchange in question had grown from a small, one-position switchboard in the early days, to a six-position, 600-line board at the time it was to be cut-over. There were more than 500 local lines and about 30 rural and trunk lines in service when it was decided to change to common battery. The toll or long distance switchboard was in the same building, but in a separate room, and the connections between the two switchboards were made over switching trunks. The outside plant was in fairly good condition for magneto operation, but there was a great deal of open wire construction. Many of the wires passed through the tops and branches of shade trees, which were abundant. There was some speculation as to how these lines would behave when connected to a common battery switchboard, so we began a series of insulation tests with the wire chief's voltmeter. We decided that any line that showed much less than 10,000 ohms' insulation resistance on rainy days would be unfit for use.

A test of all lines was made on a clear day, and all grounds and bad leaks were cleared up. The next rainy day all lines were tested again, and lines showing less than our standard minimum insulation resistance were brought up to standard by trimming, knobbing, or running tree wire. Of course, all of the leaks were not found in trees. Some were due to rotten insulation on cut-in and bridle wires, crosses with guys, contacts with cross arm braces, gutters on buildings, and some were found in the subscriber's station wiring, where wires were stapled in damp places. We made several rainy day tests before the cut-over, and each time found some lines that needed attention.

The clearing up of the lines did not receive all of our time and attention, for the subscribers' telephone sets were to be prepared for the change, too. As is usually the case in an exchange of this kind, there were several types of telephone sets. There were sets with 80, 120 and 250-ohm series bells, and others with 1,000 and 1,600-ohm bells.

We decided to put a condenser in series with the ringer in each telephone set and make the cut-over without changing any of the instruments until afterward. The condensers were set in the box behind the dry cells in the wall telephones and strapped up wherever convenient at the desk sets.

About 18 inches of No. 22 B. & S. gauge, twisted pair switchboard wire were soldered to the terminals of each condenser before taking them out of the shop. This wire was run up, through the box to any convenient point where the ringer circuit could be opened, and the condenser put in series.

Two of the boys were equipped with boxes large enough to hold about 15 condensers each. Each man carried, besides his regular small tools, a hand drill, as it was sometimes necessary to drill a hole to carry the condenser wires from the battery box up to the ringer circuit.

Each telephone was tested from the wire chief's desk, as the work was completed, to see that the condenser opened the circuit to direct current. This was done to make certain when the voltmeter was connected for a loop test and the receiver was on the hook, the needle should not show a steady deflection, but that it would give a kick each time the reverse key was operated; also when the receiver was removed the needle should show a steady deflection.

The loop resistance of each line and telephone with receiver off the hook was measured with the voltmeter. We took 750 ohms as our maximum loop resistance. The relays on our new switchboard were to be adjusted to work through that much resistance. I don't think any of the lines measured that much. If they did it was due to rusty wire and bad joints. We had no lines long enough to

measure that high. As each telephone was completed it was checked up on a numerical list kept on the wire chief's desk for that purpose.

It was sometimes found necessary to adjust the ringer movement, so as to give the armature a shorter stroke after the condenser had been cut in the circuit.

The condensers were all in and the telephones tested several days before the installers had the new switchboard ready for the cut-over.

The old main distributing frame was kept in service, so that was the point where the cut-over was made. The cables from the new switchboard were formed to fit the fanning strips on the frame, so all that was necessary to make the cut-over, was to unsolder and pull off the old cables and connect up and solder the new ones. The work of cutting over was started one night about twelve o'clock and was finished in about four hours, so few, if any, of the subscribers were inconvenienced. There were very few troubles the next morning. Two of the boys were started out taking the cranks off the telephones, as most of the subscribers were still ringing when they wanted central, and the chattering of the relays was annoying. Each telephone was tried out when the crank was removed. In some cases it was necessary to reverse the receiver cord terminals in order that the battery current flowing through it might strengthen rather than weaken its permanent magnets.

Of course, the rural lines continued to work magneto. They came in on the first position of the new switchboard, which was equipped with drops and special cord circuits for connecting magneto to magneto, or magneto to common battery. The rural position also carried the switching trunks to the toll switchboard. The company owned some other small magneto exchanges, and expected to be able to use some of the magneto sets in them. Hence immediately after the cut-over more than 100 of the magneto sets were replaced with new common battery sets. The sets so replaced were distributed among the small exchanges, enough of them being kept to always have a good stock of rewired sets on hand to exchange for the old magneto sets out in the exchange.

As the old sets were brought in to be rewired the generators were taken out and packed away for future use. It was intended to change all the sets back to magneto again, as they were needed in the small exchanges, and gradually work in regular common battery sets in this exchange. Most of the sets were wired with this in view. The so-called direct current circuit was used in most cases, as it could be arranged to work with the old wiring by changing a few of the connections. The induction coils were left in place in the boxes, this being considered better than taking them out and storing them. The transmitters were changed from low to high resistance by their manufacturers for a few cents each. We even went so far as to convert a great many of the bipolar receivers into direct current ones by removing the permanent magnet and replacing the brass bolt that goes through the pole pieces with an iron one to complete the magnetic circuit. We also put on thinner diaphragms. This was not good practice, of course, but the transmission over these sets was surprisingly good, and caused no complaints.

We were several months getting all of the magneto sets rewired. In the meantime these sets gave good service, signaling common battery and talking local battery. The troubleman never replaced a set of dry cells after the cut-over. When a telephone began talking weak he would take a rewired or a regular common battery set and exchange it.

By handling the instruments in this manner we never had many in the stockroom. They were kept out at work. Now, after a little more than three years, there are very few of these sets left in the exchange. Their places have been taken by new common battery sets. They have been given back their generators and receiver magnets and sent to the small exchanges, where they are still earning their keep.

We have succeeded in pleasing our subscribers twice. We pleased them when we gave them common battery service, and again when we gave them new instruments.

A. Southern Reader.

A Cause for the Government Ownership Agitation.

There has always been much confusion in the minds of the people upon telephone matters, not only in the minds of the subscribers but in the minds of managers and stockholders as well. This may be seen by reading the many views published in telephone and other publications and it seems the confusion is getting worse.

The experience that can now be obtained ought to enable almost any one to find out what is the matter with the telephone business and how to or what would remedy it. To find what is wrong, reference to past and present conditions must be had. For a number of years the Bell telephone company had a monopoly of the telephone business. During that time, small towns and rural people got little or no telephone service. It was not until the Independent telephone companies entered the field that small towns and rural people got telephone service.

Now, after about twelve years, this telephone service is still very poor. Many managers have no idea what good telephone service is or what a reasonable charge should be. This is also true of most of the subscribers. In many places this condition has resulted in small towns welcoming a second telephone system in their town, hoping better service would develop, but the people soon found that they had made a mistake. The subscribers of the two systems could not talk with one another as the so-called competing telephone systems, as a rule, do not connect with each other, or at least not at a reasonable rate. Right here is where our telephone competition breaks down.

The so-called telephone competition works differently from competition in any other lines of business. In a town having the so-called competitive telephone service, the subscribers must either install a telephone of each system or put up with limited and crippled telephone service. This state of affairs is called competition, but is it? The law that gives the so-called competing telephone companies the right to refuse to connect with one another at a reasonable rate, gives each of these telephone companies a monopoly through which one company can force its equipment upon subscribers of the other company, or compel them to put up with limited and crippled telephone service. Each company is practically independent. The first company is not materially affected by a second company. It gains no material advantage when the second company quits or goes out of business. The telephone competition in the United States is therefore a farce. Under the existing laws there is nothing to compete for, therefore there can not be any competition.

It is generally recognized that competition develops the highest degree of perfection. As the past telephone management has been under monopoly, and that monopoly has been represented as competition, it can easily be seen why the public is confused and has lost confidence in the present management. It has been possible to have the public think they had telephone competition. It has not, however, been possible to please them with the service supplied under that heading. As they had a smack of another kind of monopoly before, it is not hard to see why a demand for government ownership is voiced by many.

Camp Point, Ill. H. F. Joeckel.

Convention of Tri-State Independent Association

Association Expanded to Include all of the Southern States—Name Changed to the Southern States Independent Telephone Association—Over 100 in Attendance—Topics of Vital Importance Discussed by Prominent Telephone Men

The eighth annual convention of the Tri-State Independent Telephone Association, held May 21 and 22 in Memphis, Tenn., was marked by a good attendance, there being present over 100 representatives of Independent telephone companies in the states of Tennessee, Alabama and Mississippi. It was decided to expand the association to take in all of the Southern states, including Tennessee, Arkansas, Mississippi, Louisiana, and Alabama. The name of the association was accordingly changed to that of the Southern States Independent Telephone Association, with headquarters at Memphis.

The meeting opened Friday morning in the convention hall of the Business Men's Club, Frank N. Fisher, president of the club, extending a hearty welcome to Memphis on behalf of the club. The response on behalf of the Tri-State association was made by Albert Parlett, of Bristol, Tenn.-Va.

In his annual address, President W. H. Bryant, of Mobile, Ala., discussed the dissolution by agreement of the so-called telephone trust. He explained that when J. C. McReynolds was attorney general of the United States, the government was about to prosecute the American Telephone & Telegraph Co. for the alleged violation of the Sherman anti-trust law, but agreed not to do so on condition that the Bell company sever its connections with the Western Union Telegraph Co. and grant long distance toll connections to the Independent companies. The company consented to do this, he said, and the agreement was hailed as a great achievement of the Wilson administration. He asserted, however, that the terms of the contract offered by the Bell company were manifestly so unfair to the Independents that few companies have accepted service under it.

President Bryant then said that the Independent companies must look to other agencies than the Bell company for a solution of the toll connection problem and he predicted that the majority of them would join with the Postal Telegraph-Cable Co. as an opening wedge toward the establishment of a powerful organization which will compete with the Bell interests.

Hon. S. Walter Jones, a Memphis attorney, who has written a law book, "Telegraph and Telephone Companies," delivered an interesting address on "Efficiency Through Co-operation." During his remarks he stated that if the Independent companies would improve their service and increase the number of local subscribers they would soon be able to get connections with strong companies in many states.

Friday Afternoon Session.

The afternoon session opened with an interesting address by R. H. Polk, of Memphis, on "Retrospective Telephony," following which W. S. Vivian, of Chicago, secretary of the Independent Telephone Association of America, spoke on "Operating Efficiency." Mr. Vivian was followed by O. F. Cassaday, of Chicago, who presented a paper on "Increased Revenue Through Improved Transmission."

In his address on "Some Facts About the Qualified Toll Line Contract," F. B. MacKinnon, of Washington, D. C., secretary of the National Independent Telephone Association, endorsed the views of President Bryant regarding the Bell toll line contract. He reviewed in detail the technical features of the proposed toll line contract, the history of the controversy and the efforts being made by the National association to obtain justice. Following Mr. MacKinnon's address, the meeting was adjourned and the members and visitors were given an opportunity to inspect the manufacturers' exhibits at the Peabody Hotel.

At the Saturday morning session, J. C. Kelsey, vice-president of Telephony, discussed "The Financial Side of the Telephone Business." Terry W. Allen, of Jackson, Tenn., vice-president of the National Independent Telephone Association, then spoke on the subject, "Against Government Ownership." "Pork barrel appropriations would run rife under government ownership of telephone systems," he declared. "Government ownership of telephones and telegraphs would be the first step toward ownership of railroads. No competition would mean inferior service and higher rates would be the inevitable results. Through subsidization of the press, a dangerous autocracy would be developed. The control of the 2,500,000 votes of employes would prove a dangerous weapon in the hands of any political party, and the control of all wires would defeat public knowledge of government affairs."

"Memories and Hopes" was the title of an interesting address made by E. B. Fisher, of Grand Rapids, president of the Independent Telephone Association of America. The paper on "Uniform Systems of Accounts as Prescribed by the Interstate Commerce Commission," presented by LeRoy Parker, comptroller of the Ohio State Telephone Co., Columbus, and published in last week's issue of Telephony, concluded the program of the morning session.

Saturday Afternoon Session.

At the Saturday afternoon session C. Y. McVey, of Cleveland, Ohio, president of the National Independent Telephone Association, addressed the convention on "What We Are Doing in Ohio." In his address Mr. McVey advocated the appointment of a man versed in the telephone and telegraph business as a member of the Interstate Commerce Commission.

Short talks were made by George A. Scoville, of Elyria, Ohio; S. M. Heller, general manager of the Central Home Telephone & Telegraph Co., of Louisville, Ky.; and G. A. Joy, of Elyria, Ohio.

The following report of the resolutions committee was unanimously adopted:

Resolved, That the members of the Southern States Independent Telephone Association disapprove the noncommittal attitude of the Federal government in regard to the commitment made to them by the American Telephone & Telegraph Co. known as the Kingsbury letter, and we desire at this time to express our disapproval of the Federal government's attitude in this matter, believing that such attitude on the part of the Federal government is conducive to fostering monopolies, a thing disastrous to the government.

The association endorsed the proposition to amalgamate the two national associations, the National Independent Telephone Association and the Independent Telephone Association of America.

The following officers and directors were elected for the ensuing year, after which the session was adjourned:

President, Albert Parlett, Bristol, Tenn.-Va.

Vice-president, S. M. Heller, Louisville, Ky.

Secretary, W. N. McAnge, Jr., Corinth, Miss.

Directors: S. J. Whyte, Kosciusko, Miss.; Terry W. Allen, Jackson, Tenn.; J. C. Kelsey, Chicago; J. C. Duncan, Knoxville, Tenn.; R. H. Polk, Memphis, and W. H. Bryant, Mobile, Ala.

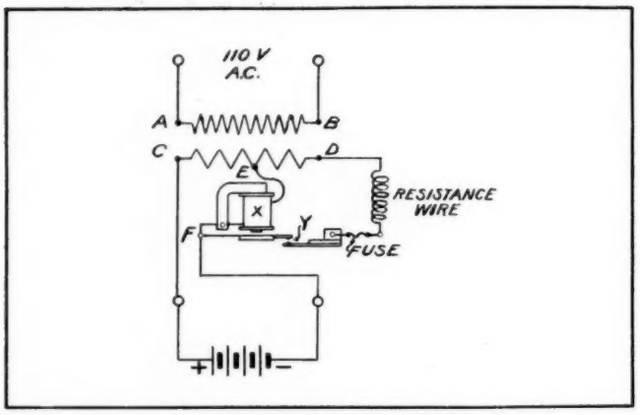
Late Saturday afternoon the Business Men's Club entertained the visitors on a sight-seeing tour by automobile through the city. In the evening a smoker was held in the Peabody Hotel, followed by a theater party.

Queries on Theory and Practice

Operation of a Wagner Rectifier.

The accompanying diagram is a sketch of a Wagner transformer used to recharge storage batteries. We think it is the correct circuit, but are not sure. Please explain the theory of its operation? Why do we get a direct current? Is it a pulsating current? Why will it work equally well without poling the wires to the battery?

This transformer takes 1.7 amperes, 110 volts alternating current and delivers about 7 amperes, 7.5 volts direct current to the storage cell. When we tried to work it backwards with battery as the generator, we got about 42 volts alternating current across the 110-volt terminals, why not 110 volts? We shall appreciate your explanations of theory of operation.



Circuit of the Wagner Rectifier.

The rectifier utilizes that part of the alternating current wave which is flowing in the proper direction to charge the battery and opens the charging circuit when the current would otherwise flow through the battery in the opposite direction, discharging it. For this reason the current in the charging circuit is always undirectional.

The current that charges the battery is a pulsating current.

Referring to the circuit sketch, the winding *C D* is the secondary of the transformer of which the primary winding *A, B,* is connected to the main alternating current circuit. Therefore, supposing that the contact *Y* were never opened, the alternating current in the secondary, *C D,* would charge the battery part of the time, and then when the polarity of *C D,* was reversed would discharge it an equal amount. The contact *Y* is opened by the action of the magnet *X* whenever the current from the secondary *C D,* is flowing in such a direction as to discharge the battery unless prevented. This is true regardless of the polarity of the battery being charged.

In order to charge the battery, the polarity of the secondary, *C D,* must be opposed to the polarity of the battery. That is, positive must be connected to the positive pole of the battery and negative to the negative pole. But the polarity of *C D,* is constantly being reversed. Therefore the polarity of *C E,* a part of *C D,* is also being reversed. By an examination of the circuit and supposing the battery to be connected to the rectifier as shown, positive to terminal *C,* it is clear that no current can flow through the coil *X* when *C* is positive and *E* is negative as the battery voltage will oppose it. When the polarity of the secondary, *C D,* is reversed by the reversal of the primary current in *A B, C* becomes negative and *E* positive. When this is true, the battery will not oppose the flow of current in the coil *X,* and the partial secondary *C E,* but will assist it to energize the magnet controlled by the coil *X.* This will attract its armature and open the main battery charging circuit at the contact *Y,* which it should do in order to prevent the battery discharging itself again. As the current is reversed in the primary the next time, the current is prevented from flowing in the coil *X* by the battery voltage opposition and the contact is allowed to close through the de-energization of the magnet controlled by *X.* Since *C* is now positive and *D* is negative, the battery will charge until the next reversal occurs. It is clear that this will occur no matter which way, as to polarity, the battery is first connected for charging.

The reason that a smaller voltage is realized on the primary terminals when the instrument is worked as a pole changer, is because the battery circuit is opened at *Y* a large part of the time. Therefore the magnetic flux created in the core of the transformer does not change as rapidly as it does when the instrument is operated normally. The voltage produced is therefore less.

Ringing Central on Grounded Party Lines.

We are having lots of trouble on our grounded rural lines getting central. These lines are from 8 to 20 miles long with from 8 to 16 1,600-ohm five and four-bar magneto telephones on each line. The grounds are good. We ring them O. K. We are now using 100-ohm and 50-ohm drops. Can you give us the proper resistance to use in our drops for these lines? What is probably the trouble?

A four-bar hand generator is seldom strong enough to ring properly on a 16-party line, especially as long as yours are. Usually a 1,600-ohm drop works best on a line with 1,600-ohm bells though a 1,000-ohm drop is a little more certain to operate. Test your insulation carefully. If that is all right, you may have to change the drop to 1,000 ohms and the four-bar hand generators to five-bar generators. Be sure that the drop is in perfect condition, both electrically and mechanically.

Dr. Bell Awarded Edison Medal.

The Edison Medal "for meritorious achievement in electrical science" was conferred upon Dr. Alexander Graham Bell at the annual meeting of the American Institute of Electrical Engineers, held in New York City, May 18. The presentation address was made by J. J. Carty, president-elect of the Institute and chief engineer of the American Telephone & Telegraph Co. Dr. Schuyler Skaats Wheeler, chairman of the Edison Medal committee, presided at the ceremony and recounted how the Edison Medal was founded by old associates and friends of Thomas A. Edison, the award being made annually by a committee of 24 members of the A. I. E. E. Thomas A. Watson, of East Braintree, Mass., Dr. Bell's associate in the early work on the telephone, opened the program with an address on "How Bell Invented the Telephone."

In responding to Mr. Carty's presentation address and to the ovation which punctuated it, Dr. Bell hinted that electrical transmission may not stop at the conveyance of speech, but that some future inventor may yet discover means for seeing by wire, or for even the telegraphic transmission of thought between persons widely separated but having their heads inclosed in connected coils of wire. Dr. Bell also called attention to the existence of great gaps in the range of vibration between frequencies which the human senses recognize as sound and those appreciable as heat, and declared that in these gaps lie tremendous opportunities for investigation and for electrical experimentation which may lead to still greater achievements in the transmission of intelligence.

Telephone Extension in South Africa.

Telephone communication between Johannesburg and Kimberley, South Africa, was established a short time ago. For the present the service will be restricted to these two towns, but arrangements are being made to afford communication between Kimberley and 47 other offices in the Transvaal. The charge for a three minutes' conversation is 2s. 9d., or approximately 65 cents.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities and Actions of City Councils Bearing Upon Franchises, Rates and Service

Department of Justice Asked to Dissolve A. T. & T.

Last week there was filed with the Department of Justice, at Washington, a statement prepared by the attorneys for the minority stockholders of the Central Union Telephone Co. urging the government to cause the dissolution of the American Telephone & Telegraph Co. as a holding company. The statement was presented in opposition to the buying of the plant of the Delaware & Madison Counties Telephone Co. at Anderson, Ind., by the receivers of the Central Union company. This is one of the contracts which were under consideration at the time of the agreement of the A. T. & T. Co. with the government and for which approval is sought before final consummation.

Mayor Vetoes Order for Forfeiture of Chicago System.

The attempt of the Chicago city council to forfeit the franchise of the Illinois Telephone & Telegraph Co. and to take possession of the automatic plant in the name of the city, has aroused a storm of protest and opposition among the bankers and corporation heads of the city. Petitions were received by Mayor Thompson and the aldermen from the Chicago Clearing House Association and a number of bankers and brokers, protesting against the council's action and urging reconsideration and abandonment of the plan to institute proceedings for the forfeiture of the automatic company's franchise.

In their petition the investment bankers declare, in part, that as a result of their experience in such matters they are firmly convinced that the confiscation or attempted confiscation by any municipality of the property of any public utility operating therein invariably destroys the confidence of investors in any of the securities of public utilities in such a municipality and also lessens the confidence in the securities of the municipality itself.

Mayor Thompson was probably influenced by the opposition to the council's order in his action early this week, in vetoing the order "to proceed at once to forfeit the automatic telephone system."

Upon the recommendation contained in the mayor's veto, the council reconsidered its action of a week ago passing the order and amended its language. The order as passed in its new form directs the corporation counsel "to submit an ordinance or ordinances declaring forfeited to the city" the rights and properties of the telephone system.

The first order was construed as directing the institution of court proceedings to bring the property into the hands of the city. This effect, it was held, was wiped out by the amendment, which will do nothing more than bring the subject of forfeiture before the council exactly as if it never had been acted upon. In this form it will be brought up at a meeting of the council next week.

Hearings in Maryland Telephone Investigation.

Whether the rates to be fixed for the Chesapeake & Potomac Telephone Co. should be based on the depreciated value, the original value or the reproduction cost, was a question taken up by the Maryland commission in its hearing last week.

As these various values include an estimated range of from $9,000,000 to $15,000,000 the importance of the point at issue can be readily seen. Rates sufficient to give a fair return on a $15,000,000 valuation would be considerably higher than on a $9,000,000 basis.

Attorney Osborne I. Yellott, counsel for the commission, made an exhaustive presentation of facts, figures and blueprint diagrams, on which he based his contention that the rates should be based on the depreciated value of the property.

"The public," Mr. Yellott contended, "is obligated to furnish the money for new equipment whenever the old equipment wears out. It is very much easier and better for the public to replace this equipment as it does wear out than to be putting aside little amounts all the time on an estimated basis of how long it will take to wear out."

Mr. Yellott was of the opinion that the guarantee of the commission that the property would not be allowed to depreciate beyond the point at which the commission found it, was sufficient to make any depreciation surplus unnecessary.

In the matter of establishing the reproduction cost of the telephone plant there was a difference of over $1,000,000 in the figures of W. W. Anderson, expert engineer for the commission, and George W. Whittemore, for the Chesapeake & Potomac company.

Mr. Anderson's figures for the total reproduction value were $13,645,000, while Mr. Whittemore's estimate was $14,683,000. The estimates of the two engineers on various phases of the work of reproduction were widely apart. Mr. Anderson allowed $11,000 as working capital for the first year of construction, while Mr. Whittemore allowed $85,000. On intangibles, organization, development costs and depreciation Mr. Anderson's figure was $6,409,000 and Mr. Whittemore's $7,805,000.

The main cause for the difference, however, Mr. Anderson stated, was due to the fact that he had eliminated a charge of $250,000 for general executive expenses on the ground that it had been allowed in the overhead construction and had also cut out the charges for advertising and canvassing, because most of such work done in the past would be unnecessary at the present time.

New Resolution Drafted in Los Angeles Franchise Problem.

Declaring that interchange telephone service promised the greatest relief from high rates and was preferable to measured service, the Los Angeles, Cal., city council has decided to submit to the voters at the June election the question of whether the city should grant franchises or renewals of franchises to any company that would refuse to grant the interchange of service.

As stated in a previous issue of TELEPHONY the council had decided to submit to the people the question of whether the telephone franchise for the Pacific Telephone & Telegraph Co. should be renewed when it expires next year. This action was rescinded, however, the council believing it too drastic, and a resolution substituted in which the following question is put before the voters:

"Shall it be the policy of the city of Los Angeles to refuse to grant telephone franchises or the renewals thereof to any company that will not agree to interchange service with other telephone systems?"

Company Not Required to Connect With Private System.

That a telephone company is not required to connect with a private intercommunicating system unless by contract, was the decision recently rendered by Judge Galloway in the Oregon circuit court in the case of the First

National Bank, of Albany, against the Pacific Telephone & Telegraph Co. The court dismissed the plaintiff's complaint for an injunction against the defendant disconnecting from the bank exchange. Notice of appeal to the state supreme court was given.

When the new First National Bank was erected in Albany an intercommunicating system was installed in the bank by the Home Telephone Co. The Bell company refused to connect with it. Without the knowledge of the latter company, it is said, its telephone line in the bank was connected with the intercommunicating system. When the Bell company started to disconnect its lines from the bank, a temporary injunction was secured against the interruption of the service. The case was tried in the circuit court some time ago.

It was urged by the defendant that the company was responsible for the service given and could not render good service unless it maintained the system with which it was connected. The court upheld this contention and ruled that the law does not compel a company to connect with an intercommunicating system and that the bank had no right to make the connection except by agreement of the parties.

Decision Rendered in Columbia (Mo.) Telephone Case.

After an exhaustive investigation of the affairs of the Columbia Telephone Co., of Columbia, Mo., the public service commission has rendered its decision in the complaint filed last December by J. Ben Simms as to rules and practices of the defendant.

The commission finds that the classification of private residences having two or more roomers or boarders as boarding or rooming houses and applying thereto a different rate than is applied to private residences, is unreasonable and unjust and that it results in discrimination. The company is ordered to discontinue the practice.

The company is also ordered to desist from requiring a deposit of $3 or any other sum from its subscribers upon the installation of a telephone, and the charging of 50 cents where there is a telephone in a house moved into, which is connected up and suitable service can be rendered without further expense to the company.

According to the commission's order payment in advance for three months may be demanded by the defendant company as a precedent to the installation of new telephone service for any subscriber in Columbia, and after the expiration of the three months' period the company shall be permitted to demand and receive the payment of one month's rent in advance.

It is further ordered that complainants and the defendant company be at liberty at any time after an actual test of operation under the rates, rules, regulations and classifications fixed in this order, to apply to the commission, for a modification thereof, if found to be unreasonable or unjust to the public or the defendant, or shall fail to provide a fair and just return on the fair present value of defendant's properties as fixed in the order.

Investigation of the Social Telephone Co. of South Dakota.

In the investigation into the rates, charges and practices of the Social Telephone Co., of Britton, S. D., by the South Dakota Railroad Commission, records were presented showing that the company is incorporated with a capital stock of $35,000, that it has 465 stockholders, and that it operates exchanges in Britton, Newark, Kidder, Claremont and Hecla, and rural lines radiating from each of these exchanges, and connects with other companies at several points. The exchange at Claremont is owned and operated jointly with the Grotney-Ferney Telephone Co. The Langford Telephone Co. owns and operates an exchange at Langford and connects with the Social Telephone Co. at Britton and with the Pierpont Telephone Co. at Pierpont. It also has a connection with the Grotney-Ferney Telephone Co. and the Social Telephone Co. at Claremont.

The records also show that there are no contracts covering the connecting arrangements with these different companies on file with the commission, as required by the South Dakota statutes.

The rental rates charged by the Social Telephone Co. for the different clases of service are as follows: Business rate, $1.50; residence rate, $1; stockholders' rate, any service, 75 cents. Where a stockholder paid rent for one telephone and desired the service of a second telephone, he could secure it by the purchase of an instrument and paying for the installation. This practice of the company is in violation of the South Dakota statute, which forbids a telephone company charging a different rate to stockholders. The commission held that any equipment now owned by individual subscribers should be taken over by the company and reasonable compensation paid therefor, and each subscriber be required to pay the regular rental charge for each of the telephone instruments installed for his use.

After a careful investigation of the company's records and making an inventory of its properties, the commission ordered the Social Telephone Co. to enter into written contracts with the different companies with which it has connecting arrangements. It further ordered the company to establish the following schedule of rates, which became effective the first of this month:

Main line business telephone....	$ 1.50 per month
Party line business telephone....	1.25 per month
Main line residence telephone....	1.25 per month
Party line residence telephone....	1.00 per month
Rural party line telephone.....	1.25 per month
Rural party line, per year.....	15.00

This schedule applies to all of its subscribers except those at its Hecla exchange. For that exchange the following schedule of rates was authorized:

Main line business telephone.....	$1.50 per month
Party line business telephone....	1.00 per month
Residence telephone.....	1.00 per month

The schedule authorized for the Hecla exchange shall remain in effect until such time as an investigation may be had of the conditions existing in that exchange.

It is further ordered that the Social Telephone Co. and the Langford Telephone Co., which was also represented at the hearings held in connection with the investigation, be required to enter into written contracts with the different companies with which either of them have connecting arrangements, and that copies of the contracts be filed with the commission within 30 days.

The Social Telephone Co. is ordered to desist from the practice of permitting its subscribers, whether stockholders or not, from purchasing and owning part of the equipment used in the conduct of its business, and to charge and collect from each of its subscribers the regular schedule of rates for each and every telephone instrument installed by it. The company is required to charge and collect for its telephone instrument installed in the depot at Britton its regular rental rate for the same class of service as is charged to its other subscribers.

The Langford Telephone Co. is ordered to furnish within 30 days information as to why it has failed to classify its service and failed to establish a different rental charge for business telephones than for residence telephones.

Paducah, Ky., and Bell Company Reach Agreement.

Litigation which has extended over a period of ten years, and which was nowhere in prospect of completion, has been ended in Paducah, Ky., by settlement of the differences between the city and the East Tennessee Telephone & Tele-

graph Co. By the terms of the agreement, which was signed by F. L. Woodruff, for the company, and Mayor T. N. Hazelip for the city, the Bell company agrees to purchase for $500 a franchise which the city had sought to compel it to buy, not to increase any rates for at least one year, and to pay the costs of the court proceedings, which will amount, it is stated, to something like $2,500.

By the suit, filed in 1905, the city of Paducah asked that the East Tennessee company be compelled to buy a franchise. The case was fought in the state courts, and carried to the Supreme Court of the United States, by which it was sent back on an error. The telephone company then intimated it would like to compromise, and the suit was permitted to rest for a time, with the results recorded.

In recent years the city had removed all the company's instruments from the city departments, including fire and police departments. Shortly after the settlement was announced, however, according to the same agreement, crews of the Bell company appeared at the city hall and the other departments and replaced 15 telephones, which will be supplied free of charge. The settlement is considered a complete victory for the city.

Anti-Duplication Decision of Wisconsin Commission.

The Wisconsin Railroad Commission has dismissed the complaint of the Wonewoc (Wis.) Telephone Co. against the La Valle (Wis.) Telephone Co., alleging infringement of territory under the anti-duplication law, as applied to towns. The Wonewoc company claimed that the La Valle company had extended its service to a resident in the town of Summit, Juneau county, where the Wonewoc company was operating. The commission found that the La Valle company had a telephone line on the dividing line of the town, and had given service to a farmer who lived across the road in the town of Summit. Upon this statement of facts the complaint was dismissed.

Milbank (S. D.) Physical Connection Case Appealed.

The Dakota Central Telephone Co., of Aberdeen, S. D., has appealed to the circuit court of Grant county from the decision of the railroad commission in which the commission ordered a physical connection between the exchange of the Dakota company in Milbank and that of the Grant County Telephone Co., also operating in Milbank.

Summary of State Commission Hearings and Rulings.

ILLINOIS.

May 20: In the case of the city of Mattoon, Ill., against the Coles County Telephone & Telegraph Co., a general reduction in rates is denied, it being found that the company is earning but 7 per cent. on its investment, which is a reasonable return. The company, however, is ordered to discontinue the practice of requiring a deposit to establish credit by the subscriber.

May 20: Permission granted Patoka (Ill.) Telephone Exchange to increase rural switching rates.

May 20: Complaint of John Morath, et al., vs. Perry Springs Telephone Co., dismissed.

May 20: Intertownship Telephone Co., of Shabbona, Ill., vs. De Kalb County Telephone Co., of Sycamore, terms for physical connection required in a former order, stated.

May 20: Intertownship Telephone Co., of Shabbona, Ill., permitted to issue $10,000 of its capital stock.

May 20: Certificate of convenience and necessity granted to the Beason Telephone Co. to construct an exchange at Beason, Ill.

May 20: Beason (Ill.) Telephone Co. permitted to issue $6,500 of its capital stock.

May 20: Contract between the Lebanon (Ill.) Telephone Co. and the Commercial Telephone & Telegraph Co., of Olney for joint use of facilities, approved.

May 20: Calhoun Telephone Co., Hardin, Ill.; Beecher City (Ill.) Telephone Co., Antioch (Ill.) Telephone Co., Blandinsville (Ill.) Switchboard Co., granted permission to change rates.

May 20: Permission granted the Commercial Telephone & Telegraph Co., of Olney, Ill., and the Murphysboro (Ill.) Telephone Co. to operate their lines in connection with each other.

May 20: Receivers for the Central Union Telephone Co. and the Altona (Ill.) Mutual Telephone Co., granted permission to operate their lines in connection with each other.

May 20: Receivers for the Central Union Telephone Co. and the Warren Mutual Telephone Co., of Bath, Ill., given permission to operate their lines in connection with each other.

May 25: Hearing in Chicago on complaint of Hotel Sherman Co. against the Chicago Telephone Co. as to charges and service.

May 25: Hearing in Chicago on application of Farmers' Mutual Telephone Co., of Altona, Ill., for authority to change rates of subscribers who are stockholders, and subscribers who are not stockholders.

MICHIGAN.

May 14: Application filed by the Michigan State Telephone Co. for permission to increase its rates in Detroit, Mich.

MISSOURI.

April 3: Order issued in the case of the complaint of J. Ben Simms vs. the Columbia (Mo.) Telephone Co., requiring the company to make a number of changes in its rules and practices and to file a new schedule of rates in conformity with the modifications set forth in the order.

May 22: The commission granted the application of W. H. Fajen to sell and J. W. Houchens to buy the Stover Telephone Exchange, at Stover, Mo., for a consideration of $3,200.

NEBRASKA.

May: The commission denied the application of the Surprise (Neb.) Telephone Co. for permission to increase its rates from $1 to $1.50 per month on each of the nine exchanges operated by the company because it involved the giving of universal county service. The commission held that it would not be just to require all subscribers to pay for county service whether they desired it or not.

NEW YORK.

May 26: Hearing in the matter of the inquiry instituted by the commission as to the Federal Telephone & Telegraph Co., of Buffalo, N. Y., rendering certain service without charge, and as to certain pay stations.

OHIO.

May 21: Central Union Telephone Co. and the Hopedale (Ohio) Telephone Co. given permission to operate their lines in conjunction with each other. The companies are ordered to file with the commission a schedule of rates and charges for such interchange service, after which time the order granting the interconnection becomes effective.

May 21: George D. Klein, receiver for the New Castle (Ohio) Telephone Co., is authorized to sell the properties of the New Castle company to the receivers for the Central Union Telephone Co. and the receivers for the Central Union Telephone Co. are authorized to purchase and acquire the properties of the New Castle company.

May 21: Receivers for the Central Union Telephone Co. are authorized to sell to the Jefferson & Warren Telephone Co., of Orangeville, Ohio, certain toll line property used to furnish toll service to and from Cherry Valley, Andover, Orwell, Colebrook, Lindenville and West Williamsfield, Ohio, and vicinity. The Central Union Telephone Co. and the Jefferson & Warren Telephone Co. are also given permission to effect a physical connection between their lines and to file a schedule of rates for such interchange service, the order to become effective upon the filing of such a schedule.

OREGON.

May 15: Application filed by the Coos & Curry Telephone Co., of Marshfield, Ore., for permission to increase its switching charges on calls originating on farmer lines from 25 to 75 cents per month, and also for permission to increase its rentals for telephones on 15-party lines from $1 to $1.50 per month.

SOUTH DAKOTA.

June 2: Hearing at Hill City, S. D., in regard to an investigation of the new schedule of rates filed by the Nebraska Telephone Co., for its Hill City exchange on February 3 and suspended by order of the commission on March 1.

WISCONSIN.

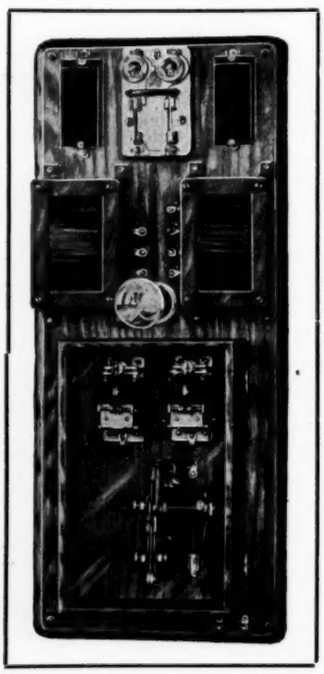
May: The commission dismissed the complaint of the Wonewoc (Wis.) Telephone Co. vs. the La Valle (Wis.) Telephone Co., alleging infringement of territory under the anti-duplication law as applied to towns.

May 27: Hearing in regard to application of the Random Lake (Wis.) Telephone Co. for authority to increase rates, tolls and charges. U.—789.

From Factory and Salesroom

A New Ringing Machine.

Although the dry battery pole changer is being universally used by the smaller exchanges as the best means to obtain a permanent source of ringing current, dry batteries are an expensive source of power. They require continual attention, and it is necessary to pick out the individual cells, as they become exhausted, and replace them with new ones, in order to maintain the proper voltage of the complete set. During the last five years, 24-hour electric light service has become quite general, particularly in districts that receive their supply from utility companies having large central stations and distributing the power over high tension transmission circuits.



The Leich Frequency Converter.

With the exception of a few old lighting systems 60-cycle, 110-volt circuits are being universally employed and practically considered standard. This current, due to its frequency of 60 cycles per second, is not suitable to operate polarized telephone ringers, and it is necessary to provide a current of a lower frequency. The sluggishness of the clapper of the ringer prevents it from traveling fast enough on a weak current to respond to 60 alternations per second.

With these points in mind, the Cracraft, Leich Electric Co., of Genoa, Ill., has been making extensive experiments as a result of which the Leich frequency converter has been produced. This converter supplies pulsating or alternating ringing current for telephone purposes without the use of batteries.

The Leich frequency converter takes the place of the pole changer, and is designed to operate on a 60-cycle, 110-volt alternating current lighting circuit, delivering a 20-cycle, 90-volt alternating current at the ringing side. This is accomplished by first rectifying the 60-cycle alternating current by means of an inductance coil and two rectifying vibrators, producing two sources of direct current. A pole changer, consisting of a main vibrator, then changes this current to an alternating current of 20 cycles per second, or it may be tuned to produce such other frequency as may be desired. This 20-cycle alternating current is passed through a transformer to step up the voltage to approximately 90 volts. An additional winding is added to the secondary of the transformer and connected to a third terminal having a ringing voltage of approximately 110 volts.

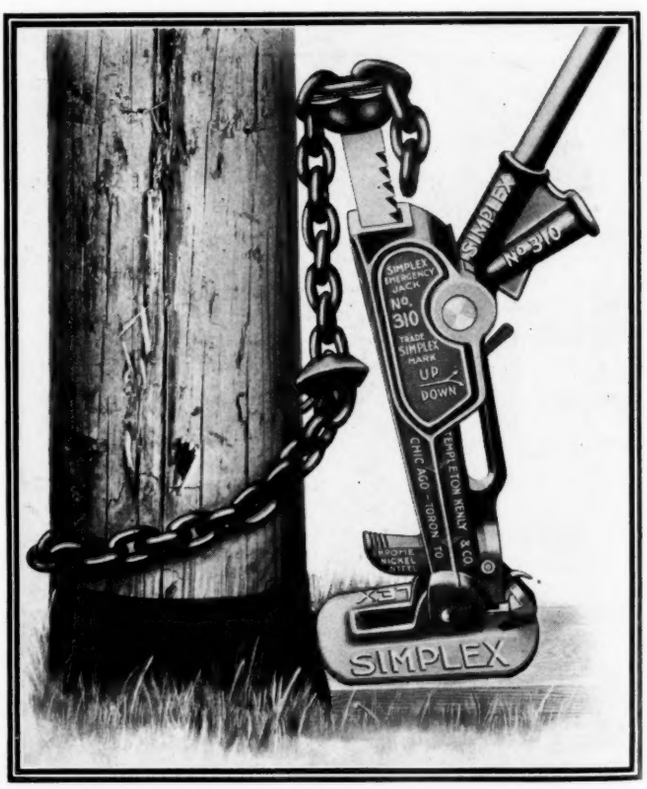
The power required to operate the Leich frequency converter is approximately 10 watts. The ringing load, being very little in excess of that, will bring the operating cost, running 24 hours per day, to 75 cents or $1 per month, figuring on a basis of 10 cents per kilowatt hour. In many exchanges a rate of 6 to 8 cents per kilowatt hour is obtained, and in the majority of cities any additional current over and above that used for lighting does not exceed 8 cents. These rates still further reduce the expense of ringing with the converter. The Leich frequency converter, therefore, provides a suitable and economical means of converting a 60-cycle alternating current into a 20-cycle, 90-volt ringing current, dispensing with batteries and requiring practically no attention so long as the lighting circuit is maintained.

The vibrators are designed to last indefinitely. No sparking is observed at the contacts when operating, unless the machine is subjected to a very heavy ringing load. With the proper protection against short circuits this converter, it is claimed, will carry an exchange of 2,000 telephones. The machine can also be arranged to provide positive and negative pulsating current for party line ringing, by simply placing additional contacts on the main vibrator.

Additional information will be gladly furnished regarding this new ringing machine by addressing the Cracraft, Leich Electric Co. at either its Genoa, Ill., or Kansas City offices.

A New Jack for Setting and Pulling Poles.

Telephone construction and repairmen frequently experience considerable difficulty in setting and pulling poles. To overcome the difficulties encountered in this work, Templeton, Kenly & Co., Ltd., of Chicago, have developed and placed on the market a combined crane and jack which, it is said, will lift or push a pole at any angle. An instance of its utility is shown in the accompanying illustration, wherein two Simplex emergency jacks are used in lifting a pole from the ground. The pole may thus be held while, for instance, the rotted bottom is cut off. In straightening or pulling a pole from the ground, the Simplex may also be used to advantage.



Pulling Pole from Ground with the Simplex Jack.

The standard frame is a heavy malleable iron casting ribbed for stress in every direction. The circular bottom of the frame rests with a machine fit upon two circular shoulders, which are a part of the large, well-proportioned base. In this way the base takes the load, and the steel

pin acts to hold the frame in position. The rack bar and cap are heavy drop forgings. The top of the cap is recessed for the chain, which is a part of the equipment. The double socket of crucible steel, supported by a heavy trunnion bearing, makes it possible to handle a load with the jack at any angle. The working angle of the jack is from 30 degrees to 90 degrees to the horizontal. The trip at the back of the base either holds the frame in a rigid vertical position or releases it to pivot on the base. Five feet of chain and a steel lever bar comprise the equipment.

The Simplex jack has been awarded the gold medal for safety of jacks by the American Museum of Safety.

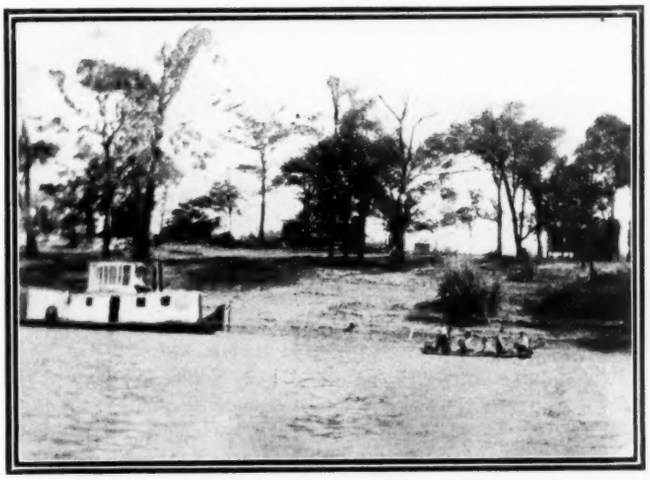
Another Garford Installation.

The People's Telephone Co., of Butler, Pa., has contracted with the Garford Mfg. Co., of Elyria, Ohio, for the complete rebuilding of its 2,000-line local switchboard. The rebuilding will incorporate the latest Garford service efficiency features, such as automatic ringing, automatic operator control, secret service, instantaneous recall, instantaneous disconnect, and automatic call records. In addition to the incorporation of these features, 240 additional complete line circuits will be added to the main board. A new two-position multiple type, magneto and comon battery rural board with special night toll provision will also be installed.

Locating Trouble in a Submarine Telephone Cable.

In a letter to W. N. Matthews & Brothers, St. Louis, Mo., H. J. Jeffery, district manager of the Paducah Home Telephone & Telegraph Co. at Paducah, Ky., tells of his experiences with the Matthews telefault in locating trouble on a submarine cable.

Crossing the Tennessee river at Paducah, the Paducah Home company has a 10 pair No. 18 gage armored submarine cable, approximately 4,000 feet in length. A few weeks ago the cable was almost completely put out of service by a lightning storm. In order to restore service on the company's toll lines, it was necessary to clear the trouble in this cable at once. Hiring a boat and barge, the company's repairmen raised the cable and made numerous tests with a Matthews telefault. One opening



Repair Crew Starting from Shore.

in the cable was made on the east bank of the river, clearing up several pairs. But the cable still appeared to be in trouble. Upon making additional tests with the telefault, it was found that the trouble was in the river. The troublemen then raised the cable and made three openings, exactly hitting the trouble in each instance, Mr. Jeffery states. Repairing the cable at those three points left it in perfect working order.

Locating Submarine Cable Trouble—Preparing to Open the Cable—Repairing—Repaired.

The Paducah company, according to Mr. Jeffery, is using two of the Matthews instruments in its trouble work, and finds them indispensable.

H. G. Webster Enters Consulting Engineering Field.

Following the successful operation and acceptance of the automanual telephone system recently completed under his direction at Lima, Ohio, H. G. Webster announces the opening of his own office in the Monadnock Block, Chicago, as consulting engineer. He has been actively engaged in telephone and other engineering work since prior to 1900. During 1901 to 1903 he was responsible for many of the developments adopted as standards by the Stromberg-Carlson Telephone Mfg. Co. and the Kellogg Switchboard & Supply Co. In 1903 he became associated with the late Milo G. Kellogg, and for the ensuing eight or nine years had a prominent part in the development, engineering and patent work carried on by Mr. Kellogg and subsequently by the Kellogg Switchboard & Supply Co.

H. G. Webster.

Early in 1912 Mr. Webster was made chief engineer for the North Electric Co. and the Telephone Improvement Co., of Chicago, taking up the final development and standardization of the automanual system then represented by the exchanges previously installed at Ashtabula, Ohio, Greensburg, Ind., Galesburg, Ill., and other points.

After the difficulties resulting in receivership of the Telephone Improvement Co. and the North Electric Co. early in 1914, Mr. Webster was employed by the receiver, George A. Welch, of Cleveland, to continue in charge of the engineering and installation of the 4,000-line automanual system then in process of construction for the Lima Telephone & Telegraph Co. The successful completion of the Lima equipment marks a somewhat unique accomplishment in telephone exchange development. While involving a new system of circuits with many new mechanical features, nevertheless its commercial operation has developed, it is stated, no difficulties calling for material modification of the original designs.

Mr. Webster plans to handle general consulting and engineering development work, patent investigations, and expert testimony. He will also specialize in telephone engineering, electric signaling and automobile accessories, in which lines he has had much experience. Mr. Webster is a Telephone Pioneer and a member of the Electric Club of Chicago.

Fire Alarm and Police Telephone—A Telephone By-Product.

In the production of gas for municipal supply, the question of profits does not depend solely upon the rates for the gas consumed, but upon the by-products as well. They include coke and the many products of coal tar. The real large factor of cost in the supplying of gas is the plant account, represented by pipe lines, gas tanks and producer machinery. This constitutes the so-called "readiness to serve" factor, which in the gas rate is the largest part of the cost to the consumer.

In the telephone plant there are no by-products connected with the production of service, but in the line construction it has a capacity and distribution for other electric circuits, not harmful to telephonic transmission. Therefore, it is greatly in the interest of net earnings, if this capacity may be capitalized to the largest extent without increasing the hazards of operation. To fill this field of opportunity, a fire alarm may be installed in subscribers' residences which will probably cost the property owner from $5 to $10 initially with an annual maintenance cost of $1 per station. This cost, it is said, will be absorbed by the lowering of insurance rates.

Super-imposed upon this residential fire alarm system is a police patrol system, which may be readily leased to the police department, giving a most comprehensive means of communication, for an annual rental of not less than $25 per station.

Every city block represents a prospective location for a fire alarm master box, which the municipality might be easily induced to purchase from its tax fund, and from one to fifty fire alarm subscribers may be secured at $1 each, per annum, and one police patrol telephone substation.

Installation charges may be arranged to cover the entire equipment costs, except the special central office switchboard, which may be either of the manual type, requiring no extra operator attendance, or of the automatic type, as preferred.

In most cities the telephone system is now carrying a large portion of the fire alarm calls, and police communications, through its subscribers' lines, without any remuneration. Because of the fact that no provision has been made for this class of service in the telephone plant, the result is confusion and often the cause of much unwarranted criticism of the telephone company.

The systems provided by The Police & Fire Alarm Telephone Co. are covered by United States letters patent. They are designed, it is said, to comply with all specifications of the best practice in both telephone and fire alarm engineering, employing standardized parts of the highest grade of materials and workmanship.

Owing to the high costs of the municipal fire alarm and police patrol telephone systems, combined with the gradual use of the telephone for that service, gratis, there is, at present, a limited extent of the municipal systems and a

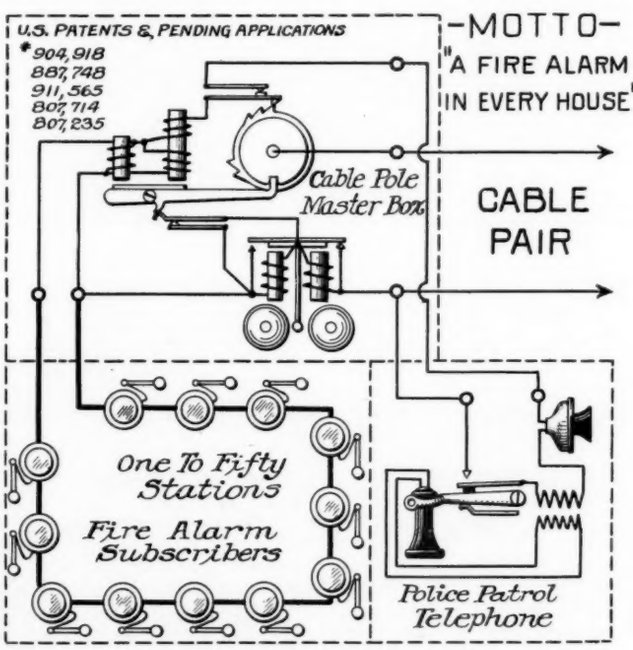


Diagram of By-Products Circuit.

large field not reached by those systems. In this field the telephone companies' by-products may be developed, and their superiority, both as to cost and efficiency, established before the present served territory need be attempted. The "fire alarm in every house" idea is one which will appeal to

everyone as the ideal fire protection. This system together with the telephone company's "readiness to serve" plant already established, creates an exclusive business awaiting only the proper introduction.

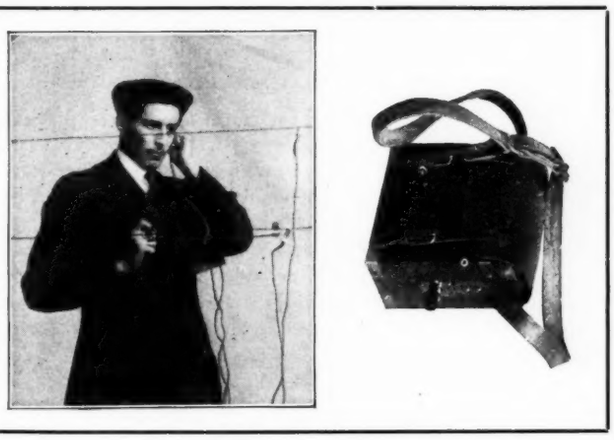
This by-product enterprise has been developed for the Police & Fire Alarm Co. by Garrison Babcock, well known in the engineering and sales branches of Independent telephony. He will now devote his entire time to the organization of local interests, who will make a national reputation for the fire alarm system, under the motto, "A fire alarm in every house."

The sales plans will be to interest the telephone companies in the establishment of a fire alarm bureau which will handle the fire alarm contracting in conjunction with the municipality. Each locality will have its agent, who will conduct this business along the line successfully followed by insurance companies, with respect to commissions for new and renewal contracts.

Mr. Babcock will be very glad to correspond with operating companies with respect to the selection of these agents, and to co-operate in giving to them a by-product income which every company will doubtless appreciate as a timely undertaking.

Improved Features of the Stewart Test Set.

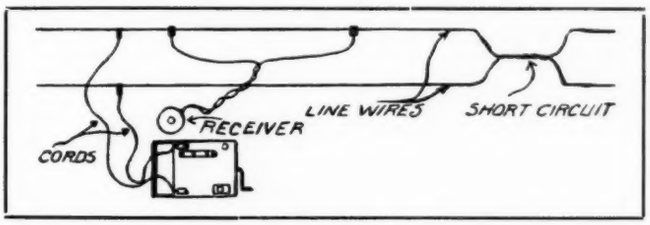
Stewart Brothers, of Ottawa, Ill., have made a number of improvements on the Stewart test set, which, it is contended,



Using the Midget Test Set.

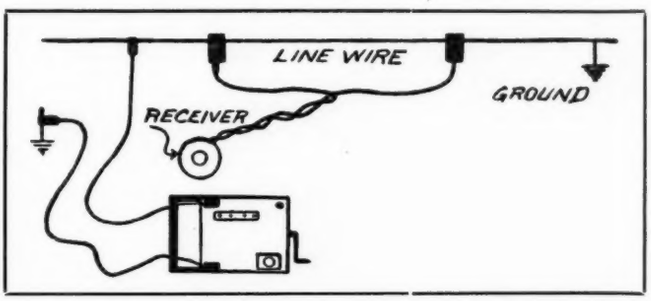
add much to the convenience of its operation. The Stewart test set is now made in two sizes, the smaller of which is called the "Midget." The Stewart Midget test set, it is said, is the smallest test set made, and weighs only seven pounds. It is equipped with a very powerful hand generator which, it is maintained, will ring in on lines having as many as 15 stations. The larger test set has a larger generator and is designed to operate where unusual conditions are to be met. This set weighs 10 pounds.

Both of these sets are now furnished with a leather top cover without extra charge. They have the Stewart features of telling which way and how far trouble is from the tester without opening the line. In addition to this, these test sets are complete portable telephones. For the benefit of those who are not acquainted with the operation of the Stewart test set a brief description of its workings will be given.



Connections for Locating a Short or Cross.

The shoulder strap is equipped with a ring and hook, by which it can be shortened so as to bring the set into the best operating position, allowing the free use of both hands. This also brings the set into position across the chest, as shown in one of the accompanying illustrations, so as to give the transmitter the value of the chest transmission. It also protects the set from pole and wind vibrations.



Method of Making Connections for Locating a Ground.

The lamp indicator tells by the brightness of the lamp about how far trouble is from the tester, the principle being that the closer the trouble the brighter the lamp will show. The lamp is so adjusted that if the line is clear, the lamp will not show at all. One can therefore always tell if a line is clear.

In one of the accompanying diagrams is shown the method of making connections when locating shorts. The receiver is taken off the set and attached to one wire, and the line cords of the set are attached one to each wire. In this case the noise in the receiver would indicate the trouble was to the

It only costs One Dollar ($1) per year to belong to the National Independent Telephone Association

Why haven't you joined the association before this? Have you ever attended any of its meetings? Would you like to learn what the business methods of other successful telephone companies are? Would you like an agent to represent you at Washington? In short, would you like assistance and service which is not otherwise obtainable unless you are a member of the—

NATIONAL INDEPENDENT TELEPHONE ASSOCIATION

527 Colorado Bldg. **WASHINGTON, D. C.**

right. If the short was in the left, the receiver would then be to the left of the line cords when the noise was heard.

When locating grounds, as shown in one of the illustrations, the receiver must be attached to the wire that is grounded. The grounded wire can be found by using the light. Also note that one of the line cords is connected to a ground wire and one to the grounded wire of the line, when locating grounds. A ground on grounded or one wire lines is located in the same way. This set works on either metallic or grounded lines.

These test sets are furnished with all cords and clips, ready for use, and will be sent on trial. Literature covering these tests sets and other apparatus made by Stewart Brothers is now beig sent out and if any company does not get a copy, a line to Stewart Brothers, will promptly bring one.

Galena, Kan., Buys Kellogg Universal.

When one thinks, studies, dreams and plans on a new central office equipment for nearly 20 years, he is likely to know just about what he is doing when it finally comes time to purchase. M. L. Robeson, manager of the Galena (Kan.) Home Telephone Co., is soon to see the fruition of his years of planning, as a Kellogg equipment of the latest universal lamp signal associated multiple type will be installed in July.

The Robesons have been throughly investigating the latest equipment of several manufacturers for nearly a year past. In that time they visited about 15 exchanges and finally decided on Kellogg universal equipment. This decision was reached, it is said, not only because the Kellogg equipment fits into their present conditions so admirably but because their investigations satisfied them it affords the highest type of common battery equipment after cut-over. Their rural development is such that nothing but full universal cord circuits throughout could be considered. This being the case, they considered the trivial additional cost of making the line circuits universal would be saved many times by convenience and avoided confusion in cut-over.

The new board will be put in service on the magneto plant by an instantaneous cut-over. When subscribers are to be changed to common battery service, a single trip to their premises will be sufficient. The present installation comprises two three-position sections with four operator's positions, 500 universal lines and 40 toll and farm lines equipped. Ultimate capacity is provided for 1,400 lines. A wire chief's desk, a chief operator's desk and a complete power plant with Kellogg five-frequency, harmonic ringing equipment, is also included.

The rural lines at Galena will terminate on flash lamp signals of the self-effacing type so that operators will not be bothered, either night or day, by inter-calling on the rural lines. All farm lamps will be multipled to appear in two different positions on the board thus assuring, it is claimed, rural service of an efficiency hitherto unknown.

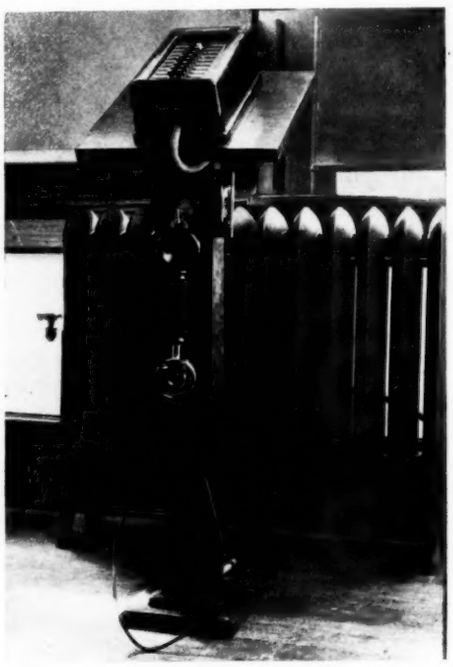
The Galena equipment will be the third universal board to be installed in Kansas and the thirteenth in the Kansas City office territory of the Kellogg company. Having successfully passed the "hoodoo number," there should be no reason, the Kellogg force maintains, why a large number of overgrown magneto plants in the Southwest should not be fitted out with like equipment during the next couple of years.

Strombery Inter-Comm-Phones at Washington, D. C.

The Stromberg-Carlson Telephone Mfg. Co.'s Intercomm-phone systems, it is said, have scored a big hit with the United States Department of Agriculture at Washington, D. C. During the past eight months several old systems of other manufacture have been taken out and replaced by Stromberg-Carlson systems. In this one department is installed a 32-station system in the office of the bureau of experiment stations, and a 22-station system in the bureau of animal industry.

These contracts, the company states, were awarded it after a thorough investigation of apparatus had been made.

The installation work in connection with both of these systems was performed by the engineers' division of the department and, it is claimed, not one case of trouble has occurred since the systems were given the final test. The



Stromberg Combination Telephone Outfit Mounted on Pedestal.

system, it is said, is very popular with the users of the telephones, due in a large measure to the use of the combination telephone outfits, of which 49 are in use.

The accompanying illustration shows the method of installation employed when one telephone serves two roll top desks. It will be noted that both the telephone and key box are mounted on the pedestal which is screwed firmly to the floor.

Order from New Zealand for Cook Protective Apparatus.

J. F. Tompkins, general sales manager for the Frank B. Cook Co., of Chicago, is quite elated in telling his friends of a nice order just received by cablegram through the company's New Zealand agents, Richardson, McCabe & Co., for the government of New Zealand.

This calls for 20 main distributing frames, complete with No. 10 and 10-W protectors, and 200 pole cable terminals. The order is practically a duplication of one received just a year ago covering 65 main frames and protectors. Thus there soon will be 85 exchanges in New Zealand fully equipped with Cook's central office protectors.

The terminal order for 200 brings the grand total of this type of apparatus supplied the New Zealand government up to 1,984, of which 1,450 are of the protected type, and the balance, 534, unprotected.

Meeting of Northern White Cedar Association.

Secretary N. E. Boucher, of the Northern White Cedar Association, has announced that the association will hold its mid-summer meeting at Beaudette, Minn., June 25 to 29, inclusive.

Paragraphs.

THE GARFORD MFG. CO. was represented at the convention of the Tri-State Independent Telephone Association, held at Memphis last week, by George A. Scoville, sales manager, and G. A. Joy, sales representative.

Record of Telephone Patents Recently Issued

1,135,887. April 13, 1915. CALL REGISTERING DEVICE FOR TELEPHONES; E. Ferran and F. D. Tweeddale, San Francisco, Cal. A coin collecting device is incorporated with the call registering mechanism. Provision is made for depositing or refunding coins dropped into the coin chute. The registering is done by means of two rotable disks which are electrically operated.

1,135,971. April 13, 1915. TELEPHONE CALL RECORDER; D. J. McGauran, Geraldton, Western Australia, Australia. A gear train controlled by the movement of the switch hook is placed in a subscriber's instrument. It is adapted to run for a predetermined time when the subscriber removes the receiver. A recording mechanism is operated after the predetermined time has expired, and a timing mechanism is operated by a current from the exchange to render inoperative the recording mechanism.

13,901. April 13, 1915. (Reissue original patent No. 1,078,690.) AUTOMATIC TELEPHONE SYSTEM; F. Newforth, Jr., Chicago; assigned to Automatic Electric Co. The feature of this invention is the provision of means for completing the connection between the calling and the called lines at predetermined intervals after the side switch or line relay has been disconnected from the line.

1,136,283 and 1,136,284. April 20, 1915. MOUTHPIECE PROTECTOR FOR TELEPHONE TRANSMITTER; C. T. Smith, Newark, N. J. These two patents relate to covers for mouthpieces of desk stand transmitters which are automatically operated by the action of the switch hook.

1,136,337. April 20, 1915. SELECTIVE SIGNALING SYSTEM; R. N. Hill, Bloomfield, N. J.; assigned to Western Electric Co. A selector at a way station is controlled by a sending key at the sending station. The sending key in its operation closes a normally open contact which causes interrupted current from a local circuit to flow over the line wires for operating an alternating current bell at the way station.

1,136,347. April 20, 1915. TELEPHONE EXCHANGE SWITCHBOARD; C. O'D. Lee, Jr., Baltimore, Md.; assigned to C. O'D. Lee, Sr. The feature of this patent is the provision of an auxiliary board upon which only answering jacks and signals are located. This auxiliary board is connected with the regular multiple switchboard and is intended to facilitate the handling of calls by a single operator during the minimum load periods.

1,136,433. April 20, 1915. TRANSPOSITION DEVICE FOR ELECTRIC LINES; G. W. Neel, Dublin, Tex. This transposition device consists of a metallic casing having its terminals bent in opposite directions. An insulator wire extends through the casing and terminals and is provided with means for connecting its ends with the line wire. The terminals of the casing are arranged to be connected with the other line wire so that the transposition may be made without danger of the line wires coming in contact with each other.

1,136,449. April 20, 1915. MICROPHONE; C. W. Underwood, Crowley, La., assigned one-half to W. M. Egan. The feature of this microphone is the provision of a plurality of compressing and agitating blades disposed in parallel and agitated by the diaphragm. The blades are disposed edgewise and longitudinally within the chamber of the receptacle so as to be in contact with the granular conducting material.

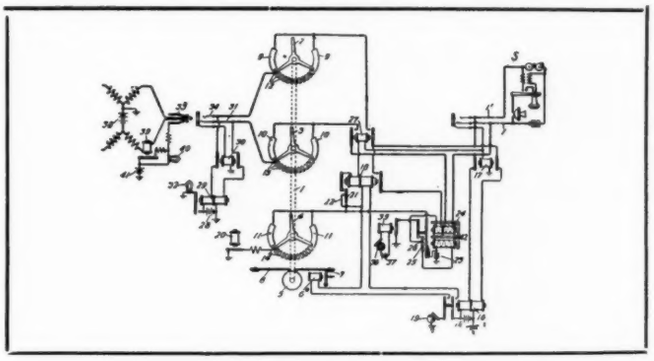
1,136,508. April 20, 1915. CALL DISTRIBUTING SYSTEM; H. P. Clausen, Mt. Vernon, N. Y.; assigned to Western Electric Co., A switch automatically connects an incoming line to an idle outgoing line upon the closure of a bridge across the conductors of the incoming line. The release of the switch is controlled by a relay the circuit of which is intermittently broken by means of an interrupter. The release of this switch can be effected only by the simultaneous opening of the bridge across the conductor of the incoming line and the circuit through the controlled relay.

1,136,687. April 20, 1915. MUFFLER ATTACHMENT FOR TELEPHONES; J. Litt, Philadelphia, Pa. This device consists of a cylindrical casing, one end of which is secured by a spring clamped to the transmitter mouthpiece. At the other end is attached another mouthpiece.

1.136.912. April 20, 1915. TELEPHONE REPEATER SYSTEM; T. G. Martin, Chicago; assigned to Automatic Electric Co. A nonnumerical trunking switch is provided for each end of a two-way trunk line. Each switch is adapted to automatically extend a trunking connection from the trunk line in the direction of the called subscriber. A repeater at one end of the trunk line is adapted to control the switch as the other end.

1,137,150. April 27, 1915. COMPOSITE ELECTRIC SYSTEM; A. D. T. Libby, Elyria, Ohio; assigned to Garford Mfg. Co. Relates to a combination telephone and fire alarm circuit. Motor operated fire alarm signal sending apparatus is provided at each substation in addition to the telephone equipment. A lamp signal is included in the substation equipment.

1,137,151 and 1,137,152. April 27, 1915. COMPOSITE ELECTRIC SYSTEM; A. D. T. Libby, Elyria, Ohio; assigned to Garford Mfg. Co. These two patents relate to a combined telephone and police signaling system. Lamp signals at the substation are operated over the conductors which are used for telephone purposes.



No. 1,136,508.

1,137,186. April 27, 1915. TELEPHONE RECEIVER; J. J. Comer, Chicago; assigned to Automatic Enunciator Co. A loud-speaking receiver is described. The feature of the receiver is an adjustable air gap between the electromagnet and the armature.

1,137,187. April 27, 1915. RESONATOR; J. J. Comer, Chicago; assigned to Automatic Enunciator Co. A horn or mouthpiece for a loud-speaking receiver is described. It consists of the combination of a plurality of resonator horns disposed one within the other and tapered in opposite directions, being unrestrictedly open at their larger ends and provided with perpendicular walls at their smaller ends. Spacer members are positioned adjacent to both ends of the inner horn for supporting it at two separated points within the outer horn and in concentric relation to it.

1,136,188. April 27, 1915. DIFFERENTIAL MICROPHONE REPEATER; J. J. Comer, Chicago, assigned to Automatic Enunciator Co. This repeater is designed for use in connection with loud-speaking apparatus. It consists of a microphone box provided with a movable stem, which has a connection with the armature of a magnet. A spring, opposing the action of the armature, is applied to the stem at a point between the armature and the box. The connection between the armature and the stem thus consists of a variable leverage connection.

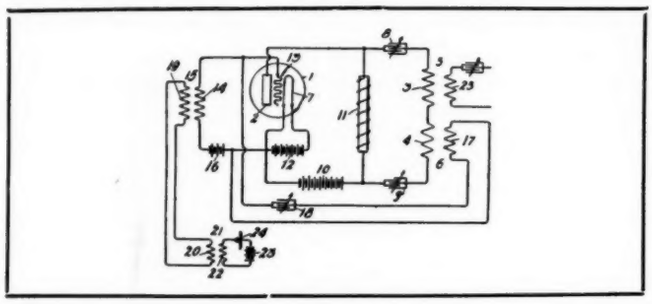
1,137,189. April 27, 1915. TRANSMITTING APPARATUS; J. J. Comer, Chicago, assigned Automatic Enunciator Co. A multiple transmitter for a loud-speaking system is described. The apparatus consists of a diaphragm and means for vibrating it. An air column communicates with each side of the diaphragm and a plurality of microphone transmitters is adapted to be operated by the compression and rarefactions in the air columns.

1,137,193. April 27, 1915. MEANS OF COMBINED TELEPHONIC AND TELEGRAPHIC TRANSMISSION; P. B. Delaney, South Orange, N. J. An automatic buzzer is provided in the base of a desk stand upon which is mounted a microphone transmitter. A telegraph transmitter controls the transmission of a series of dot and dash impulses generated by the buzzer and mechanically transmitted to the transmitter and thus over the telephone line.

1,137,200. April 27, 1915. COMMON BATTERY AUTOMATIC TELEPHONE SYSTEM; W. L. Campbell, La Grange, Ill.; assigned to First Trust & Savings Bank, trustee, Chicago. The feature of this patent relates to the provision for feeding talking current to the calling line, all talking current for the line being fed directly through the elements of an individual trunking switch for that line.

1,137,223. April 27, 1915. MACHINE TELEPHONE SWITCHING SYSTEM; F. R. McBerty, New Rochelle, N. Y., and L. Polinkowsky, Brussels, Belgium; assigned to Western Electric Co. Relates to registering and controlling equipment for machine switching telephone systems. A plurality of register controllers

is adapted to register the numerical designation of the desired line and to produce selection controlling operation in accordance therewith. The register controllers are set, one after another, through the operation of an incoming circuit and perform their selection controlling operation over an outgoing or selection controlling circuit. The association of the register



No. 1,137,384.

controller with the incoming and outgoing circuits is controlled by means of two sequence switches.

1,137,231. April 27, 1915. Machine Telephone Switching System; L. Polinkowsky, Brussels, Belgium; assigned to Western Electric Co. Relates to the register controllers for controlling the selective operation of switches by means of which a connection may be extended in a non-decimal system. A relay associated with the register controllers is adapted to be energized or remain unenergized in accordance with the set position of one of the register controllers. A circuit which includes the contacts of the relays, is arranged for delivering an impulse to the register controller to modify its set position if the relay is energized.

1,137,235. April 27, 1915. Telephone Receiver; H. H. Schneider, Seattle, Wash. A magnet of fixed polarity and a magnet of reversible polarity are located adjacent one to the other to coact. The diaphragm is carried by the permanent magnet.

1,137,315. April 27, 1915. System for the Transmission of Intelligence; R. A. Heising, East Orange, N. J.; assigned to Western Electric Co. Two thermionic repeaters having a common output circuit are connected in series. A source of high frequency potential is united with the input circuit of one of the repeaters while a source of low frequency potential variations is united with the input circuit of the other repeater. The message transmitting means are united with the common output circuits of the repeater.

1,137,360. April 27, 1915. Telephone System; C. Smith, Cleveland, Ohio; assigned to F. C. Stevens, Attica, N. Y. A semi-automatic system is described. A called signal associated with the operator's circuit is adapted to be displayed to indicate the call, while a supplemental signal associated with the connecting means is adapted to be displayed only when the operator's telephone is connected to the operator's circuit.

1,137,372. April 27, 1915. Telephone Exchange System; J. L. Wright, Washington, D. C.; assigned to F. C. Stevens, Attica, N. Y. Relates to the control of automatic switching mechanism in a semi-automatic exchange.

1,137,384. April 27, 1915. System for the Transmission of Intelligence; E. H. Colpitts, East Orange, N. J.; assigned to Western Electric Co. A repeater having an input and an output circuit with a connection between them, serves as a generator of high frequency current. The transmission line is connected with the output circuit of the repeater and a sending device adapted for producing signaling impulses of low frequency is connected with the input circuit.

1,137,399. April 27, 1915. Multi-Coin Collector and Rate Indicator for Automatic Telephone Systems; C. L. Goodrum, New York; assigned to Western Electric Co. Coin controlled means permit a partial operation of the subscriber's calling device for the purpose of ascertaining the amount in coins to be deposited. The deposit of a coin of the ascertained value is required before the completion of the operation of the calling device is permitted.

1,137,478. April 27, 1915. Device for Detecting Mechanical Vibrations; F. Gottschalk, Stirling, N. J. A vibratory member is carried on a stem projecting from a transmitter cell. A casing completely closing and surrounding the cell and vibratory member, shields them from the direct action of sound waves.

1,137,479. April 27, 1915. Resistance Cell for Transmitters; F. Gottschalk, Stirling, N. J. The diaphragm of this cell is of a greater diameter than the outer wall of the electrode chamber. The diaphragm is arranged so that it is free to vibrate.

1,137,614. April 27, 1915. Amplifier for Telephones; R. D. Hatch, Memphis, Tenn. A sound intensifier is described. It consists of a horn with a contracted portion and a flaring funnel-shaped part. A central conical, open-ended, tubular extension within the flaring end has one end adapted to be positioned adjacent to the diaphragm of the receiver. Means are provided for attaching the horn to the receiver.

1,137,865. May 4, 1915. Telephone System; E. E. Kleinschmidt, New York; assigned to the Hall Switch & Signal Co. This system is designed for telephone train dispatching and rovides for the selective signaling of local stations. Selective switches bridged on the line circuit at the local stations are operated by combinations of direct current and reversals of current.

1,138,147. May 4, 1915. Method of Tuning Telephone Receivers; H. J. Power, Everett, Mass. In this patent is described a method of tuning a telephone receiver to signaling impulses of a particular frequency. It consists in varying the degree of saturation of the cores of the receiver magnet and maintaining the reluctance of the magnet circuit approximately constant.

1,138,174. May 4, 1915. Telephone Exchange System; G. Babcock, Chicago; assigned to Telechronometer Co., Rochester, N. Y. The feature of this system is the provision of a service meter at the subscriber's station. Two sources of current are connected in opposition. Provision is made for connecting one of the sources to a line in response to a call, while the second source is connected through the first source to reverse the direction of current flow in the line to operate the meter.

1,138,175. May 4, 1915. Telephone System: G. Babcock, Chicago; assigned to Telechronometer Co., Rochester, N. Y. Relates to a message metering system in which the message meter at the substation is rendered inoperative when a shunt circuit is closed. The contacts of the shunt circuit are normally closed.

1,138,186. May 4, 1915. Grounding Device; L. S. Brach, New York. This device consists of a plurality of pan-shaped plates spaced apart in superposed relation. The plates are relatively decreasing in size from the bottom up. A quantity of absorbent material, placed within the concave portion of each plate, aids in retaining moisture. All of the plates are electrically connected.

1,138,224. May 4, 1915. Electrical Switch Key; W. Kaisling, Chicago; assigned to Kellogg Switchboard & Supply Co. This key is of the multiple push button type. The plungers alternately insert a conductor and insulation between the spring contacts.

1,138,255. May 4, 1915. Intercommunicating Telephone System; H. T. Slee, Warwick, R. I. A test board is described. It comprises a plurality of wires and switches connecting the batteries and telephone instruments for talking and ringing. Provision is made for readily disconnecting the battery current from all of the wires and supplying it to any pair of lines to test for a short circuit.

1,138,283. May 4, 1915. Telephone Call Register; W. G. Dodge and C. L. Leave, Boston, Mass. A visual register is provided at the subscriber's station. It is electrically operated by means of a current sent over one side of the telephone circuit and the ground.

1,138,389. May 4, 1915. Attachment for Telephone Transmitters; T. Luby, Philadelphia, Pa.; assigned one-half to M. Rothschild. This attachment consists of a closure for the transmitter supported by yoke members so arranged that the closure may be locked over the mouthpiece of the transmitter.

1,138,688. May 11, 1915. Self Restoring Annunciator; A. C. Reid, Genoa, Ill.; assigned to Cracraft-Leich Electric Co. A drop for magneto multiple switchboards is described which has two electromagnets for releasing and restoring the drop shutter.

1,138,698. May 11, 1915. Telephone; E. S. Stewart and C. D. Stewart, Ottawa, Ill. An instrument which may be used as a transmitter and a receiver for a lineman's test set is described in this patent. A diaphragm is mounted on a casing so as to form a substantially air tight compartment. An electromagnetic receiver winding for actuating the diaphragm is mounted within the casing while a variable resistance transmitting element, mounted on the outside of the casing, has a movable electrode which is actuated by the diaphragm through the air confined within the casing when the diaphragm is under the influence of sound waves exterior of the casing.

1,138,734. May 11, 1915. Automatic Telephone Responding Apparatus; E. J. Cressey, Wichita, Kans. Relates to the combination of a phonograph with a subscriber's telephone set in such a way that the phonograph will respond to calls. Electrically controlled apparatus in the signal circuit of the tele-

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phone acts to hold the circuit of electrically operated means on the phonograph closed until a complete repetition of the record response has been made.

1,138,879. May 11, 1915. TRUNKING SYSTEM FOR TELEPHONE EXCHANGES; F. R. McBerty, New Rochelle, N. Y.; assigned to Western Electric Co. This trunking system is designed for use in semi-automatic or automatic exchanges. A switch at the subscriber's station is adapted to close the trunk line when in use.

Means at one end of the trunk line, operable upon the opening of the switch, are adapted in successive stages to open the trunk line and to interpose therein a source of current which operates a circuit controlling device at the other end of the trunk.

1,138,959. May 11, 1915. TELEPHONE TRANSMITTER; D. Koenig, New York; assigned to Western Electric Co. The feature of this transmitter is the provision of means for conducting away from the transmitter cell, heat which may be generated.

1,139,127. May 11, 1915. COMPOSITE ELECTRIC SYSTEM; A. D. T. Libby, Elyria, Ohio; assigned to Garford Mfg. Co. A combined telephone and police signal system is described. The police signaling system utilizes a conductor independent of the telephone conductors and ground. A lamp signal at each substation is adapted to be connected in circuit with one of the telephone conductors and the independent conductor. The operation of the lamp is controlled by a relay in circuit with the telephone conductors.

Legal Cases and Decisions

By A. H. McMillan

Paralleling Toll Line.

"We have a grounded toll line on a private right of way which is giving service and connects with the Mountain States Telephone & Telegraph Co.'s lines through a switchboard. This line is averaging about $150 gross earnings per month, so we do not feel that we can afford to string wire at the present time, as we are taking care of all the business we can get.

"An electric light and power company is going to set poles and string a high tension power circuit paralleling our line for 50 miles, which will ruin our toll line.

"Now, what I want to know is, what can we do about it? Of course, we could make our line full metallic, but the business will not warrant the additional charge. It is doubtful if we could get a raise in rates, as we are allowed now a little over two cents a mile for short hauls and a little less than one for the longer mileage. We might state that we follow the railway right of way, but are on private property, or, in other words, just over the fence.

"Kindly advise what, in your opinion, would be the proper thing to do, and if there are any decisions on this subject in this state. We understand that this power circuit is to be used for the electrification of the C., M. & St. P. R. R."

When a telephone company and a traction railway company are jointly using the streets in the same city in such a way as to conflict with each other, each company is bound to exercise reasonable care in the maintenance of its lines so as to prevent interference with the lines of the other company. If the telephone company can obviate the serious effects of induction by increasing the distance between its wires and those of the electric company, it is the telephone company's duty to do so. The effect of induction at a distance of 15 feet is but slight, the rule being that induction between parallel lines is inversely proportioned to the square of the distance between them. Rocky Mountain Bell Telephone Co. vs. Salt Lake City Railway Co.; 3 American Electrical Cases, 356.

The cost of providing metallic lines to replace the telephone company's earth circuit system, when rendered necessary by a railway company's adoption of electricity as its motive power, cannot be recovered by way of damages from the railway company, the telephone company having no vested interest in, or exclusive right to, the ground circuit or ground system. Bell Telephone Co. vs. Montreal Street Railway Co., Rap. Jud. Quebec, 6 Cour Du Banc. De La Rein, 223. The foregoing applies to injury by induction, or where a telephone company's wires are grounded in the streets.

When the telephone company's wires are grounded upon its own property, and it suffers injury from conduction due to the escaping current from the railway company, it may recover from the railway company such damages as are occasioned thereby. This rule is based upon the doctrine that the lawful, harmless and customary use upon one's land, alike of water, air or electricity, cannot lawfully be obstructed or impaired by the injurious act of another, attended with disturbances of natural existing conditions and consequent loss. It is not material that the injurious act is done upon the premises of one other than the injured party. Cumberland Telephone & Telegraph Co. vs. Railway Co., 93 Tenn., 492; 4 American Electrical Cases, 297; 29 Southwestern, 104. Hudson River Telephone Co. vs. Watervliet R. Co., 135 New York, 394, 642; 32 Northeastern, 148; 31A Southeastern, 838; 4 American Electrical Cases, 275. National Telephone Co. vs. Baker Law Reports, 2 Chancery Division 186. McMillan on Telephone Law, Chapter 11.

Under the latter decision, we think you might either restrain the railroad company from doing any act which would injury your use of your lines, or, if injurious consequences followed the building of the line, recover damages for the injuries inflicted. The law applicable to your situation is, we think, stated in the preceding paragraph. We find no decisions on the subject in Montana.

Franchises in Oklahoma.

"We own and operate a small exchange in an incorporated town of about 400 inhabitants. We have no franchise, and would like to know how we can get one. There are four or five men here who claim they have a franchise which they obtained before this became a state. They are not using it, if they have one. They will not make over the franchise to us. They claim that they want to keep it so that the Pioneer (Bell) company can never get in. We are the ones who need the franchise, not them. Is there any way that we can get it?"

It will be necessary for you to consult a local attorney in order to ascertain the proper steps to take to obtain a franchise. The usual steps are an application to the town council or board. A petition to the state corporation commission is also probably required. The only way we know of that you can get the franchise that your local parties have is to buy it. But before doing so, we would recommend that you have it investigated by local counsel to ascertain its validity and effectiveness.

Moving Buildings.

"Will you kindly cite us decisions covering the right of telephone companies to make a charge for moving wires and cables for the purpose of letting buildings being moved on streets pass them? In McMillan on Telephone Law we note a reference to a North Dakota decision (Sec. 240), but we are of the opinion that there are several more recent decisions."

Of the more recent decisions on the subject which may be cited are: Kibbe Telephone Co. vs. Landphere, 151 Michigan, 309; Edison Electric Light & Power Co. vs. Blomquist, 185 Federal, 615; Frontier Telephone Co. vs. Hepp, 66 Misc. 265, 121 New York State, 460; Morris vs. Roundsville Brothers, 64 Southeastern, 473; and Pierson vs. Tri-State Telephone & Telegraph Co., 126 Northwestern, 1095.

Franchise in Kentucky.

"What are the correct steps to take in securing a franchise in Kentucky towns?"

In answer to this question we would refer you to your local attorney. The charters and ordinances of various towns differ so that they must be consulted in each case. As a general rule, a petition accompanied by the franchise desired, should be presented to the common council.